VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the **issuance** of the VPDES permit listed below. This permit is being processed as a **Minor, Municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et.seq. The discharge results from the operation of a 0.150 MGD (future 0.300 MGD) activated sludge wastewater treatment plant with ultraviolet light disinfection, cascade aerator, and effluent diffuser. This permit action consists of limiting pH, BOD_5, total suspended solids, E.coli, ammonia nitrogen and dissolved oxygen; and including special conditions regarding sewage sludge use and disposal, compliance reporting, control of significant dischargers, and other requirements and special conditions. SIC Code: 4952

1. Facility Name and Location:
   Western Lee County Wastewater Treatment Plant
   East of Intersection of U.S. Rt. 58 and Rt. 693, Lee County
   Ewing, VA 24248

2. Permit No. VA0093076

3. Owner Name and Address:
   Lee County Public Service Authority
   397 Park Street
   Jonesville, VA 24263

   Owner Contact:
   Tracy Puckett
   Title: Executive Director
   Telephone No: (276) 346-7775

4. Application Complete Date: 10/29/2020
   Revised Permit Drafted By: Fred M. Wyatt, SWRO Date: 11/05/2020
   Reviewed By: Steve Artrip Date: 9/23/20
   Reviewed By: MSLF Date: 9/15/20
   Public Comment Period Dates: from _____ to _____

5. Receiving Stream Name: Indian Creek; River Mile: 6BIND007.53; Basin: Tennessee-Big Sandy River; Subbasin: Clinch River; Section: 1; Class: IV; Special Standards: None

   7-Day, 10-Year Low Flow (7Q10): 2.2 MGD (June - Nov.)
   1-Day, 10-Year Low Flow (1Q10): 2.0 MGD (June - Nov.)
   7Q10 High Flow: 5.0 MGD (Dec.- May)
   1Q10 High Flow: 3.9 MGD (Dec. - May)
   30-Day, 10-Year Low Flow (30Q10): 2.7 MGD
   30Q10 High Flow: 10 MGD

   Latitude: 36°36'02"; Longitude: 83°34'59"

   Tidal? NO

   303(D) list? Yes

6. Operator License Requirements: Class II

7. Reliability Class: II, due to possible intertate effect.

8. Permit Characterization:
   ( ) Private ( ) Federal ( ) State (X) POTW ( ) PVOTW
   (X) Possible Interstate Effect ( ) Interim Limits in Other Document

9. Attach a schematic of wastewater treatment system, and provide a general description of the activities of the facility.

Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE (1)	TREATMENT (2)	FLOW (3)
001	Western Lee County - Ewing Area, Lincoln Memorial University and Veterinarian School	See Page 1 above, first paragraph	0.150 MGD initially; 0.300 MGD - future

(1) List operations contributing to flow (2) List treatment units
(3) Design flow

10. Sewage Sludge Use or Disposal: The dewatered sludge is shipped to Waste Management Solutions - Iris Glen Landfill, Johnson City, TN, for final disposal.

11. Discharge Location Description: Quadrangle; Number: Wheeler, Tenn-VA

12. Material Storage: None reported

13. Ambient Water Quality Information:

The proposed outfall will discharge into Indian Creek in segment VAS-P24R_IND01A00. The 2018 Integrated Water Quality Report lists this segment as impaired for failure to support the recreational use. Station 6BIND009.12 had 50% and Station 6BIND010.25 had 41% of samples which exceed the water quality standard for E.coli. This segment is the mainstem from the confluence of Machine Branch downstream to the Tennessee state line, near Gibson Station, WQS Section 1.

The cause of the recreation use impairment is sewage discharges in unsewered areas and unrestricted cattle access.

There is no TMDL development for this watershed.

14. Antidegradation Review & Comments:

Tier I Tier II (X) Tier III

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards.

Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The antidegradation review begins

with a Tier determination. The receiving stream is Tier II, since the only impairment is recreational due to bacteria (E.coli).

15. Site Inspection: A site inspection was conducted on August 24, 2020, by Fred Wyatt & Mark Trent from DEQ, SWRO, and Jeff Cochran from Lane Engineering. Processing of the permit application had been dlayed until the Right of Entry was signed by the owner on August 3, 2020.

16. Effluent Screening & Limitations Development:

Basis for Effluent Limitations (0.150 MGD)

PARAMETER	BASIS FOR LIMITS *	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVERAGE	WEEKLY AVERAGE	MINIMUM	MAXIMUM	FREQUENCY	SAMPLE TYP
Flow	NA	NL	NA	NA	NL	Continuous	Totalizing Indicating & Recordin
PH	2	NA	NA	6.0 SU	9.0 SU	1/Day	Grab
BOD_5 .	2,5	30 mg/l 15 k/d	45 mg/l 22 kg/d	NA	NA	3 Days/Week	8 Hour Composite
Total Suspended Solids	1	30 mg/l 15 kg/d	45 mg/l 22 kg/d	NA	NA	3 Days/Week	8 Hour Composite
E.coli**	2	126 n/100 ml	NA	NA	NA	3 Days/Week ***	Grab
Ammonia Nitrogen (June-Nov.)	2,5	2.4 mg/l	3.2 mg/l	NA	NA	3 Days/Week	8 Hour Composite
Dissolved Oxygen	2,5	NA	NA	5.0	NA	1/Day	Grab

*1. Federal Effluent guidelines
2. Water Quality-based Limits:
3. Best Engineering Judgment
4. Best Professional Judgment
5. Other (e.g. wasteload allocation model)

** Geometric Mean
*** Between 10:00 a.m. and 4:00 p.m.

Basis for Effluent Limitations (0.300 MGD)

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVERAGE	WEEKLY AVERAGE	MINIMUM	MAXIMUM	FREQUENCY	SAMPLE TYPE
Flow	NA	NL	NA	NA	NL	Continuous	Totalizing Indicating & Recording
PH	2	NA	NA	6.0 SU	9.0 SU	1/Day	Grab
BOD_5 .	2,5	30 mg/l 34 k/d	45 mg/l 51 kg/d	NA	NA	3 Days/Week	8 Hour Composite
Total Suspended Solids	1	30 mg/l 34 kg/d	45 mg/l 51 kg/d	NA	NA	3 Days/Week	8 Hour Composite
E.coli**	2	126 n/100 ml	NA	NA	NA	3 Days/Week ***	Grab
Ammonia Nitrogen (June-Nov.)	2,5	1.3 mg/l	1.8 mg/l	NA	NA	3 Days/Week	8 Hour Composite
Ammonia Nitrogen (Dec.-May)	2,5	6.8 mg/l	9.2 mg/l	NA	NA	3 Days/Week	8 Hour Composite
Dissolved Oxygen	2,5	NA	NA	6.0	NA	1/Day	Grab

*1. Federal Effluent guidelines
2. Water Quality-based Limits:
3. Best Engineering Judgment
4. Best Professional Judgment
5. Other (e.g. wasteload allocation model)

** Geometric Mean
*** Between 10:00 a.m. and 4:00 p.m.

17. Basis for Sludge Use & Disposal Requirements: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

18. Antibacksliding Statement: Since this permit is for a new issuance, antibacksliding provisions of the Permit Regulation (9 VAC 25-31-220.1) do not apply.

19. Compliance Schedule: NA

20. Special Conditions:

PART I.B Special Condition - Compliance Reporting
Rationale: Authorized by VPDES Permit Regulation, 9VAC25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit

limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

PART I.C. Special Condition - Control of Significant Dischargers
Rationale: VPDES Permit Regulation, 9VAC25-31-730 through 900, and 40 CFR part 403 require certain existing and new sources of pollution to meet specified regulations.

PART I.D. Other Requirements and Special Conditions:

1. **95% Capacity Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 4 for all POTW and PVOTW permits.

2. **Indirect Dischargers**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

3. **CTC, CTO Requirement**
Rationale: Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790.

4. **Operation and Maintenance Manual Requirement**
Rationale: Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190 E.

5. **Licensed Operator Requirement**
Rationale: The VPDES Permit Regulation, 9VAC25-31-200 C and the Code of Virginia § 54.1-2300 et seq, Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professional Regulations (18VAC160-20-10 et seq.), require licensure of operators.

6. **Reliability Class**
Rationale: Required by the Sewage Collection and Treatment Regulations, 9 VAC25-790 for all municipal facilities.

7. **Treatment Works Closure Plan**
Rationale: This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks, or other exposure to raw materials is eliminated and water quality is maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specifications, and other pertinent informations as may be necessary to determine the effect of the wastes from this discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

8. **Section 303(d) List (TMDL) Reopener**

Rationale: Section 303(d) of the Clean Water Act requires the total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o(1)of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in the permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

9. **Sludge Reopener**
Rationale: Required by VPDES Permit Regulation, 9VAC25-31-220 C for all permits issued to treatment works treating domestic sewage.

10. **Sludge Use and Disposal**
Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

11. **Water Quality Criteria Monitoring**
Rationale: State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.

12. **Notification of Commencement of Discharge**
Rationale: This condition designed to clarify monitoring and reporting requirements before the commencement of discharge.

PART II, Conditions Applicable to All Permits
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes from the previous permit contained in the reissuance permit: NA

22. Variances/Alternate Limits or Conditions: None

23. Regulation of Users: 9 VAC 25-31-280 B 9 - NA

24. Public Notice Information required by 9 VAC 25-31-280 B:

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all the persons represented by the commenter/requester. A request for a public hearing must also include; 1) The reason why a public

hearing is requested. 2) A brief, informal statement regarding the nature and extent of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditi ons of the permit and suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:
Name: Fred M. Wyatt
Address: DEQ, Southwest Regional Office, 355-A Deadmore Street, Abingdon, VA 24210; Phone: (276) 676-4810 E-mail: frederick.wyatt@deq.virginia.gov Fax: (276) 676-4899

25. Additional Comments:

Permit Fee: A permit application fee of $7,500.00 was paid by the applicant: Invoice No. 106058. An annual maintenance fee will be required by October 1 of each year after issuance of the permit.

Threatened and Endangered (T&E) Species: According to the attached printout from the Department of Game and Inland Fisheries (DGIF),now DWR, Virginia Fish and Wildlife Information Service, the state endangered Spider Elimia (Elimia arachnoidea)(water snail) has been identified within a two mile radius of the discharge. The issuance of this permit is being coordinated with the Department of Conservation and Recreation (DCR), the Department of Wildlife Resources (DWR), and the US Fish and Wildlife Service (USFS).

Previous Board Action: None

Permit History: NA

Staff Comments:

Public Comments:

26. 303(d) listed segments (TMDL): See Item 13 above.

PLANNING CONCURRENCE FOR MUNICIPAL VPDES PERMIT

PERMIT NO. VA0093076

FACILITY: Western Lee County Wastewater Treatment Plant

COUNTY: Lee

[ ] 1. The discharge is in conformance with the existing planning documents for the area.

[ ] 2. The discharge is not addressed in any planning document but will be included, if required, when the plan is updated.

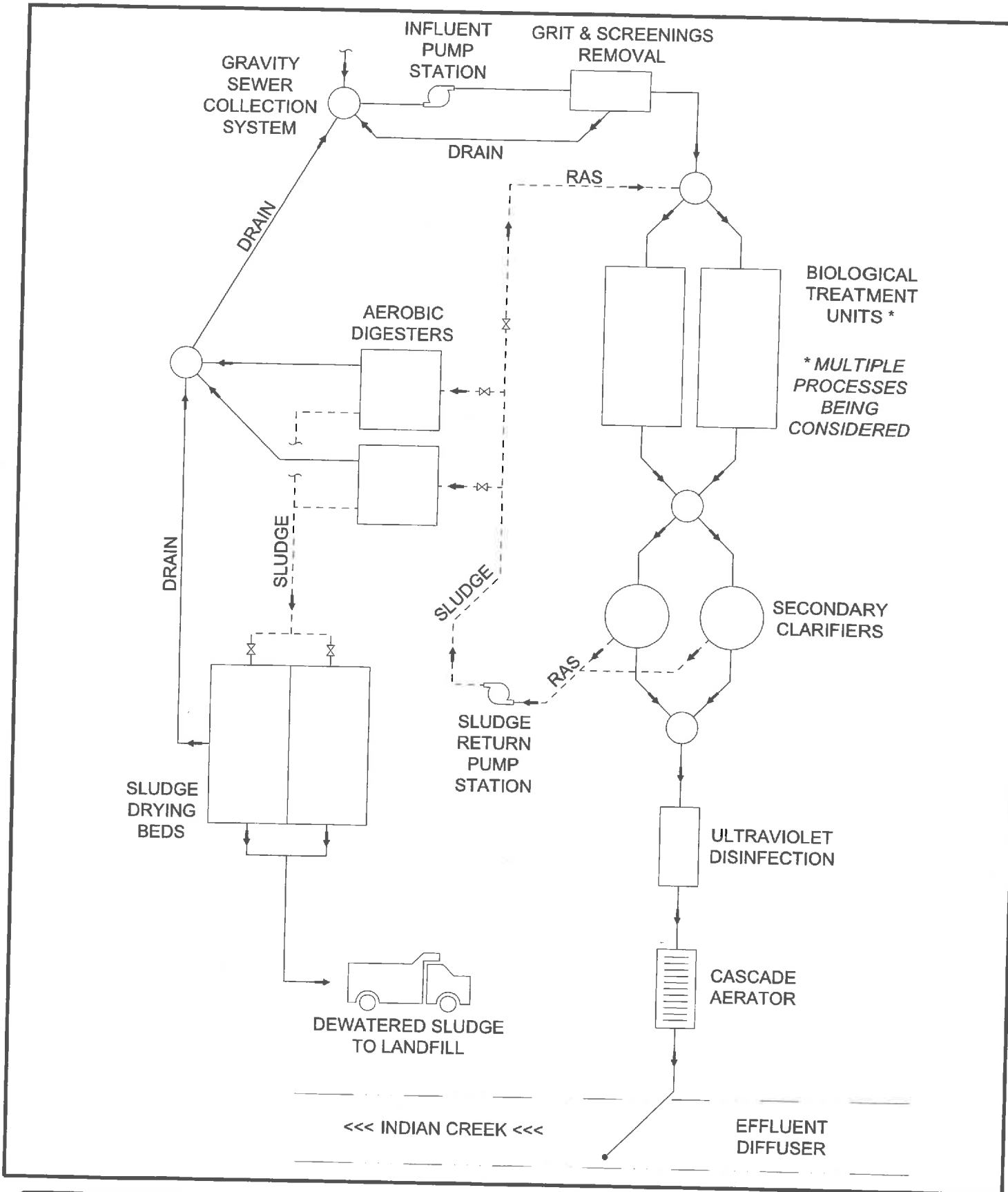
[ ] 3. Other.

_____
TMDL Coordinator

_____
Date

ATTACHMENT 1

Treatment Process Diagrams & Description



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Phone: 276.523.3771 | www.thelanegroupinc.com
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WESTERN LEE COUNTY WWTP & SEWAGE COLLECTION SYSTEM PER LEE COUNTY, VIRGINIA

TREATMENT SCHEMATIC

Drawn By:	MSA
Checked By:	RKH
Date:	27SEPT2019

PAGE
FIGURE 2

ATTACHMENT 2

Discharge Location

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

VA0093076

1 message

Chapman, Martha <martha.chapman@deq.virginia.gov>
To: Frederick Wyatt <frederick.wyatt@deq.virginia.gov>

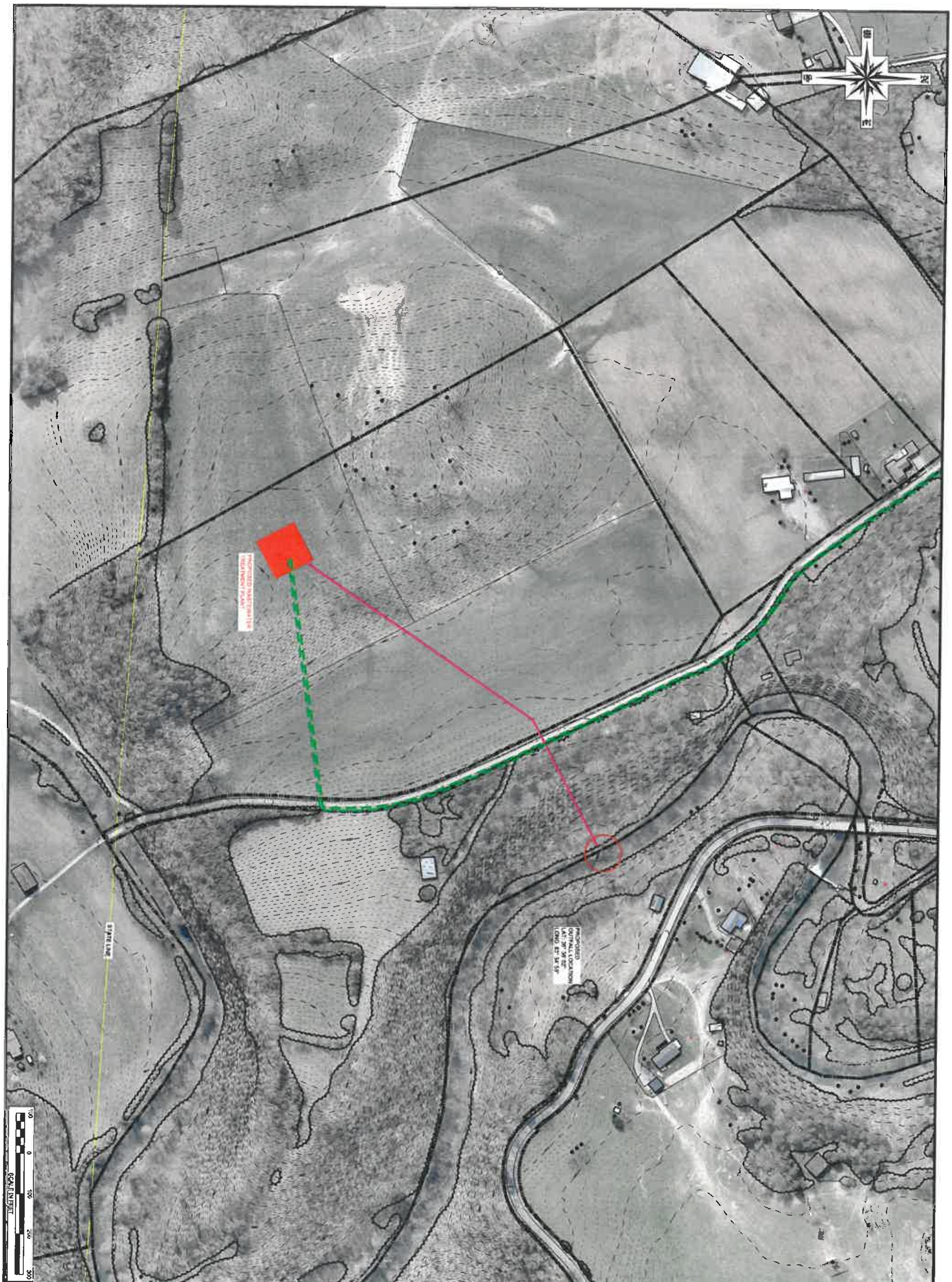
Tue, Feb 25, 2020 at 10:02 AM

I double checked the coordinates for the outfall location and they are correct.

The new river mile is 6BIND007.53.

Martha

--
Martha Chapman
Water Monitoring & Assessment Scientist
Southwest Regional Office
Virginia Department of Environmental Quality
355A Deadmore Street
Abingdon, VA 24210
Direct: (276) 676-4845



DATE	07/03/2019
NO.	REVISION DATE
1	
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3	
SHEET	C.1
DRAWN BY	PBM
CHECKED BY	
PROJECT NO.	

THE LANE GROUP INC. © 2019

WESTERN LEE SEWER
PROPOSED WWTP TOPO

WESTERN LEE
SEWER SYSTEM PROJECT
LEE COUNTY, VIRGINIA

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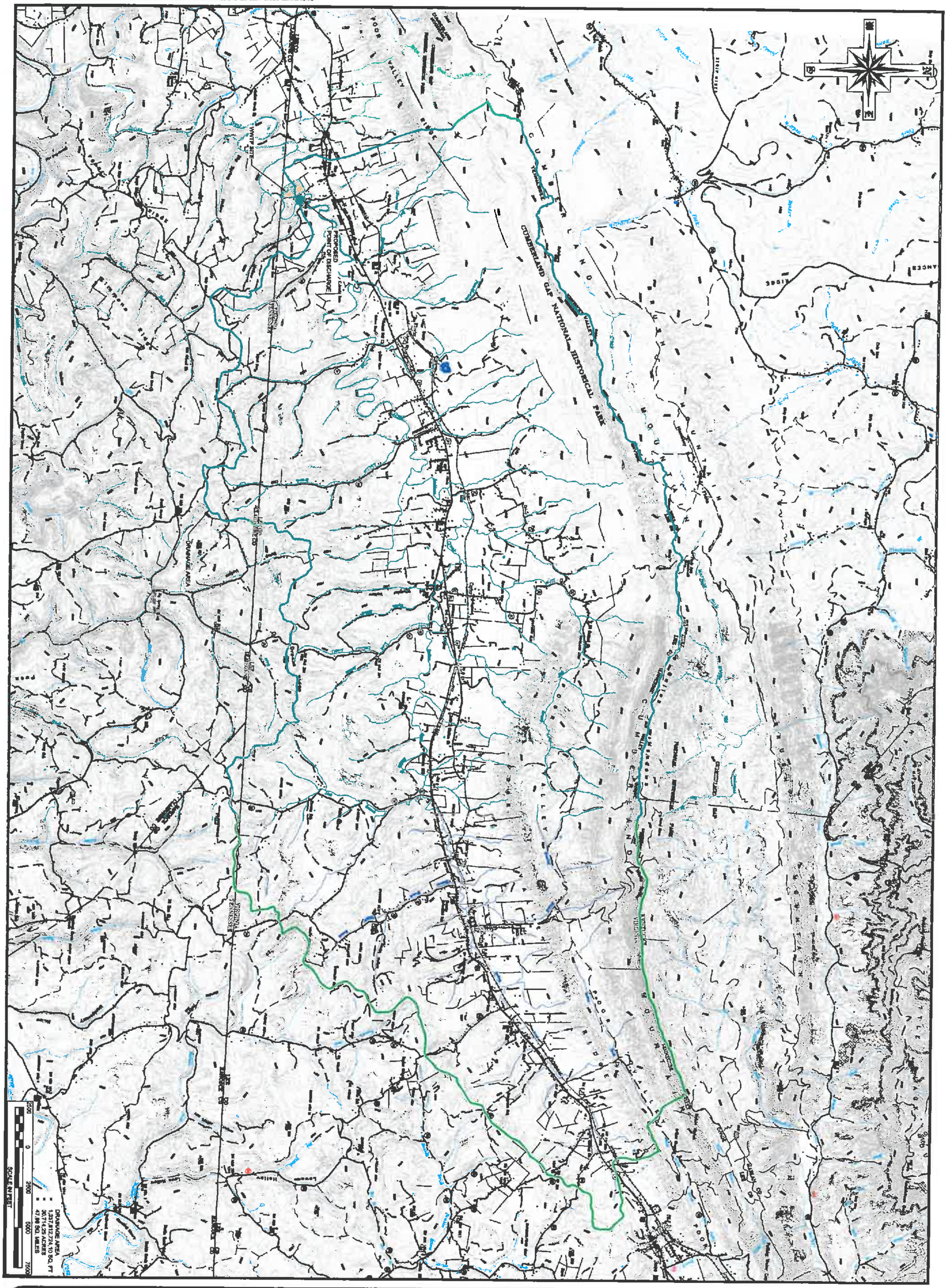
architecture
environmental

File: P:\LEE COUNTY PSA\WESTERN LEE STP AND SEWER\VPDES PERMIT\PERMIT DRAWINGS ONLY\20FEB21 - DRAINAGE AREA.DWG



DATE:	02/21/2020
NO.	REVISION DATE
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SHEET:	C.1
DRAWN BY: PBM	CHECKED BY: JTC
PROJECT NO.	

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VPDES PERMIT
DRAINAGE AREA
WWTP SITE

WESTERN LEE COUNTY, VA
WASTEWATER TREATMENT
PLANT & SEWER COLLECTION
SYSTEM PROJECT

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ABINGDON | BIG STONE GAP | GALAX

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

VA0093076

1 message

Chapman, Martha <martha.chapman@deq.virginia.gov> Mon, Mar 9, 2020 at 10:29 AM
To: Frederick Wyatt <frederick.wyatt@deq.virginia.gov>

Fred,
Attached are the T&E map and list.

The proposed outfall will discharge to Indian Creek on segment VAS-P24R_IND01A00. The 2018 Water Quality Assessment lists this segment as impaired for failure to support the recreational use. Station 6BIND009.12 had 50% and station 6BIND010.25 had 41% of samples exceed the water quality standard for E.coli.

I have also attached the factsheet.

There is no TMDL developed for this watershed.

Let me know if you have any questions.
Thanks,
Martha
--

Martha Chapman
Water Monitoring & Assessment Scientist
Southwest Regional Office
Virginia Department of Environmental Quality
355A Deadmore Street
Abingdon, VA 24210
Direct: (276) 676-4845

3 attachments

VA0093076_VAFWIS_Map.pdf
174K

VA0093076_VAFWIS_TandEList.pdf
48K

Factsheet_P24R_IND01A00.pdf
14K

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WESTERN LEE COUNTY WWTP & SEWAGE COLLECTION SYSTEM PER LEE COUNTY, VIRGINIA

WESTERN LEE WWTP
VPDES PERMIT APPLICATON
FEBRUARY 2020

Drawn By: PBM	PAGE
Checked By: JTC	FIG.1
Date: 02/14/2020	

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

Western Lee STP - Downstream Property Owners

1 message

Jeff Cochran <jcochran@thelanegroupinc.com>
To: "Wyatt, Frederick" <frederick.wyatt@deq.virginia.gov>

Thu, Sep 17, 2020 at 2:35 PM

Fred

Per your request, please find attached.

Jeff

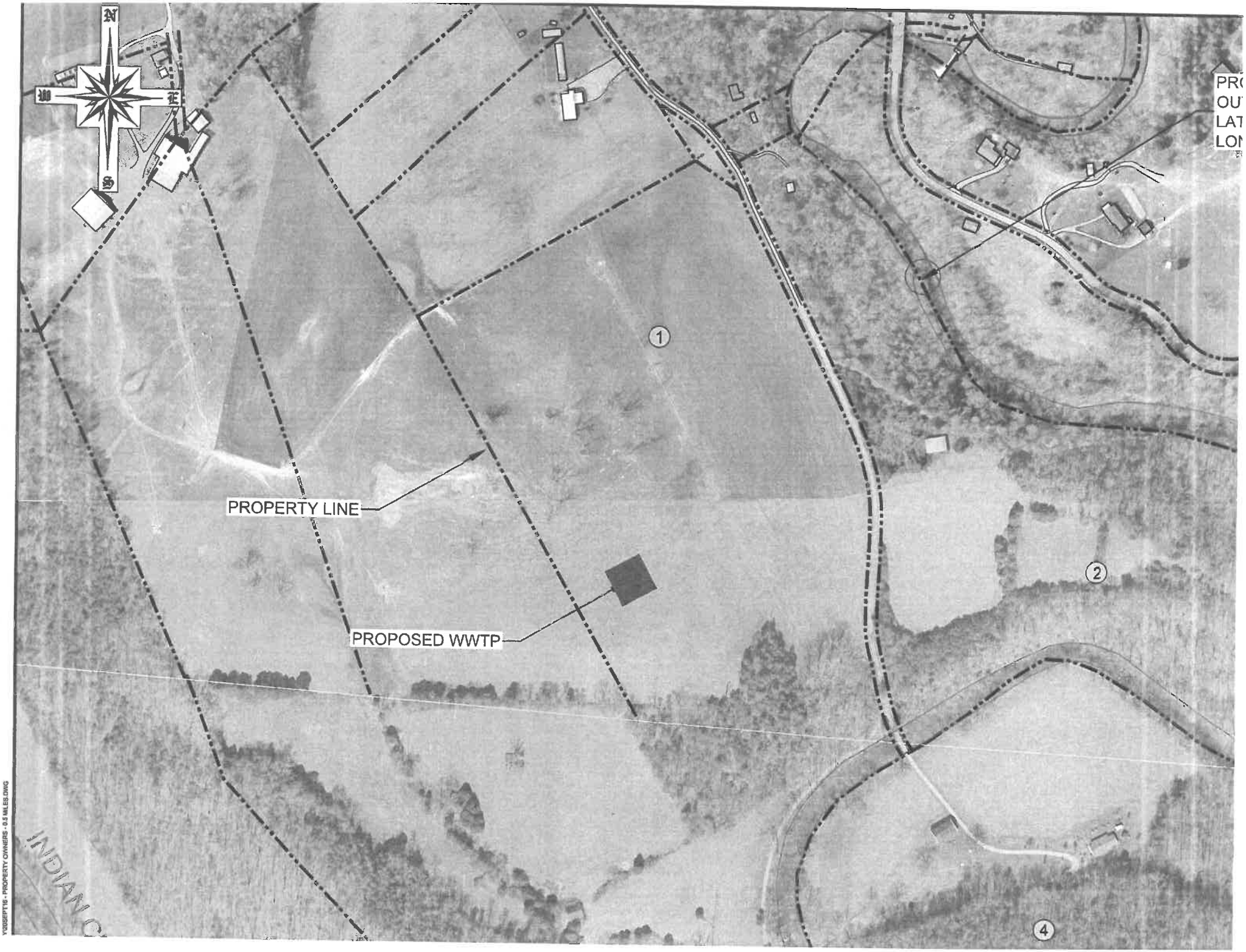
Jeffrey T. Cochran, P.E. | Senior Project Engineer

276.523.3771 – office | 276.393.9106 - mobile

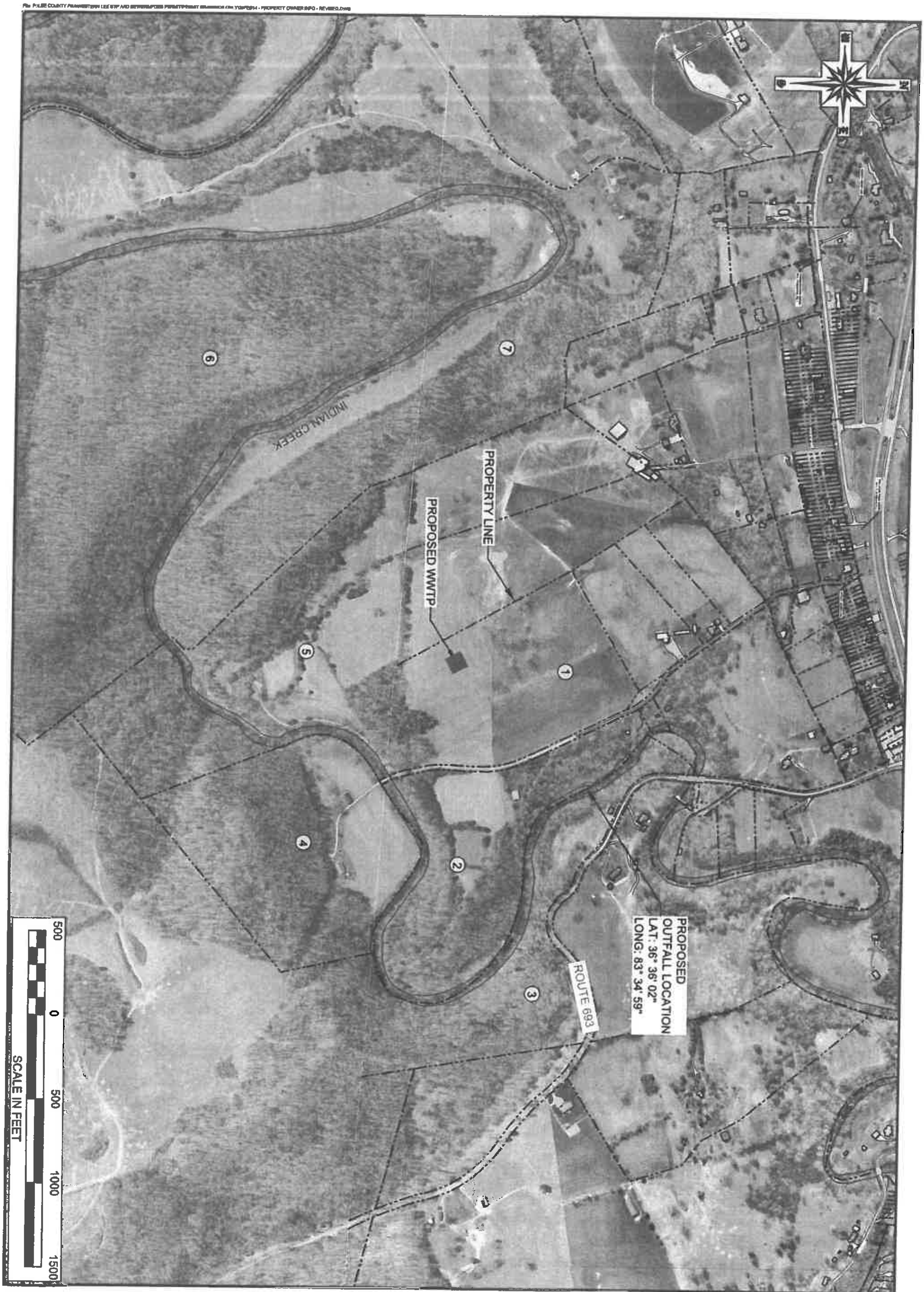
the LANE GROUP engineering architecture environmental

Abingdon | Big Stone Gap | Galax

20Sept16 - Property Owners - 0.5 Miles.pdf
3509K


N
W
E
S
PROPERTY LINE
PROPOSED WWTP
1
2
4
INDIAN C
Y:\20SEPT16 - PROPERTY OWNERS - 0.5 MILES.DWG

WESTERN LEE SEWER - WWTP ADJACENT PROPERTY INFORMATION					
MAP NO.	OWNER	TAX MAP / PARCEL NO.	ADDRESS	CITY & STATE	ZIP
1	MONTGOMERY, JAMES W	78B-(1)-TR24	284 STATION CREEK RD	EWING, VA	24248
2	BIGELOW, ADAM	78B-(1)-TR25B	318 HERMAN LN	EWING, VA	24248
3	LOWE, KYLE E	79-(A)-19	505 NASH MILL RD	EWING, VA	24248
4	SANDIFER, CLAUDE E & SHIRLEY L	003 021.00	455 GUM HOLLOW LANE	HARROGATE, TN	37752



DATE 10/18/19 NO. / REVISION DATE 1 2 3 SHEET C.1 DRAWN BY PRM CHECKED BY JTC	VPDES PERMIT APPLICATION PROPERTIES ADJACENT TO AND 0.50 MILES DOWNSTREAM OF WWTP SITE	the LANE GROUP engineering architecture environmental

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

Western Lee WWTP - Site Entry

2 messages

Jeff Cochran <jcochran@thelanegroupinc.com> Mon, Aug 3, 2020 at 1:18 PM
To: "Wyatt, Frederick" <frederick.wyatt@deq.virginia.gov>, "Trent, Mark" <mark.trent@deq.virginia.gov>
Cc: "Trent, Mark" <mark.trent@deq.virginia.gov>, Jon Broskey <jbroskey@thelanegroupinc.com>

Fred

Please find attached the signed right-of-entry for the WWTP site.

Let us know what we need to do next.

TY - Jeff

1WWTP Site ROE 20Aug03.pdf
1139K

Jeff Cochran <jcochran@thelanegroupinc.com> Mon, Aug 3, 2020 at 2:08 PM
To: "Wyatt, Frederick" <frederick.wyatt@deq.virginia.gov>, "Trent, Mark" <mark.trent@deq.virginia.gov>
Cc: Jon Broskey <jbroskey@thelanegroupinc.com>

Fred

As a point of clarification, the WWTP site is Exhibit A – 78B-(1)-TR12, 17, 18, 24, 33, and 34.

Jeff

[Quoted text hidden]

DEPARTMENT OF THE ARMY

RIGHT OF ENTRY FOR SURVEY AND CULTURAL/ENVIRONMENTAL EXPLORATION

Lee County Sewer Section 219 Project

Parcel: 78B-(1)-BK2,11-25, 78-(A)-14, 78-(A)-15, 78B-(1)-TR12,17,18,24,33,34, ~~78C-(2)-1~~, 78B-(1)-BK2,26-35, ~~78B-(1)-24~~, 78-(A)-17, and 78C-(2)-1

The undersigned, hereinafter called the "Owner," hereby grants to the UNITED STATES OF AMERICA, hereinafter called the "Government," a right-of-entry upon the following terms and conditions:

1. The Owner hereby grants to the Government an irrevocable right to enter upon the lands hereinafter described at any time within a period of twelve (12) months from the date of this instrument, in order to survey, make test borings, and carry out such other exploratory work as may be necessary to complete the investigation being made of said lands by the Government.

2. This right-of-entry includes the right of ingress and egress on other lands of the Owner not described below, provided such ingress and egress is necessary and not otherwise conveniently available to the Government.

3. All tools, equipment, and other property taken upon or placed upon the land by the Government shall remain the property of the Government and may be removed by the Government at any time within a reasonable period after the expiration of this right-of-entry.

4. If any action of the Government's employees or agents in the exercise of this right-of-way results in damage to the real property, the Government will, at its option, either repair such damage or make an appropriate settlement with the owner. In no event shall such repair or settlement exceed the fair market value of the fee interest of the real property at the time immediately preceding such damage. The Government's liability under this clause may not exceed appropriations available for such payment and nothing contained in this agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet deficiencies. The provisions of this clause are without prejudice to any rights the Owner may have to make a claim under applicable laws for any other damages than provided herein.

5. The land affected by this right-of-entry is located in the Commonwealth of Virginia
County of Lee, and is described as follows:

563 & 491 GIBSON STATION RD, 163 LEONARDS LN, 256 MONTGOMERY DR, 155 BRISTOL RD, 284 STATION CREEK RD, 233 & 161 BRISTOL RD, Ewing, VA. See attached Exhibit "A".

WITNESSES MY HAND this 3 day of Aug, 2020

James and Brenda Montgomery

UNITED STATES OF AMERICA

Mary C. Keith
Technical Resource Branch Chief
Real Estate Contracting Office

Please return the below contact information along with the signed Right of Entry (ROEs) in the provided return envelope.

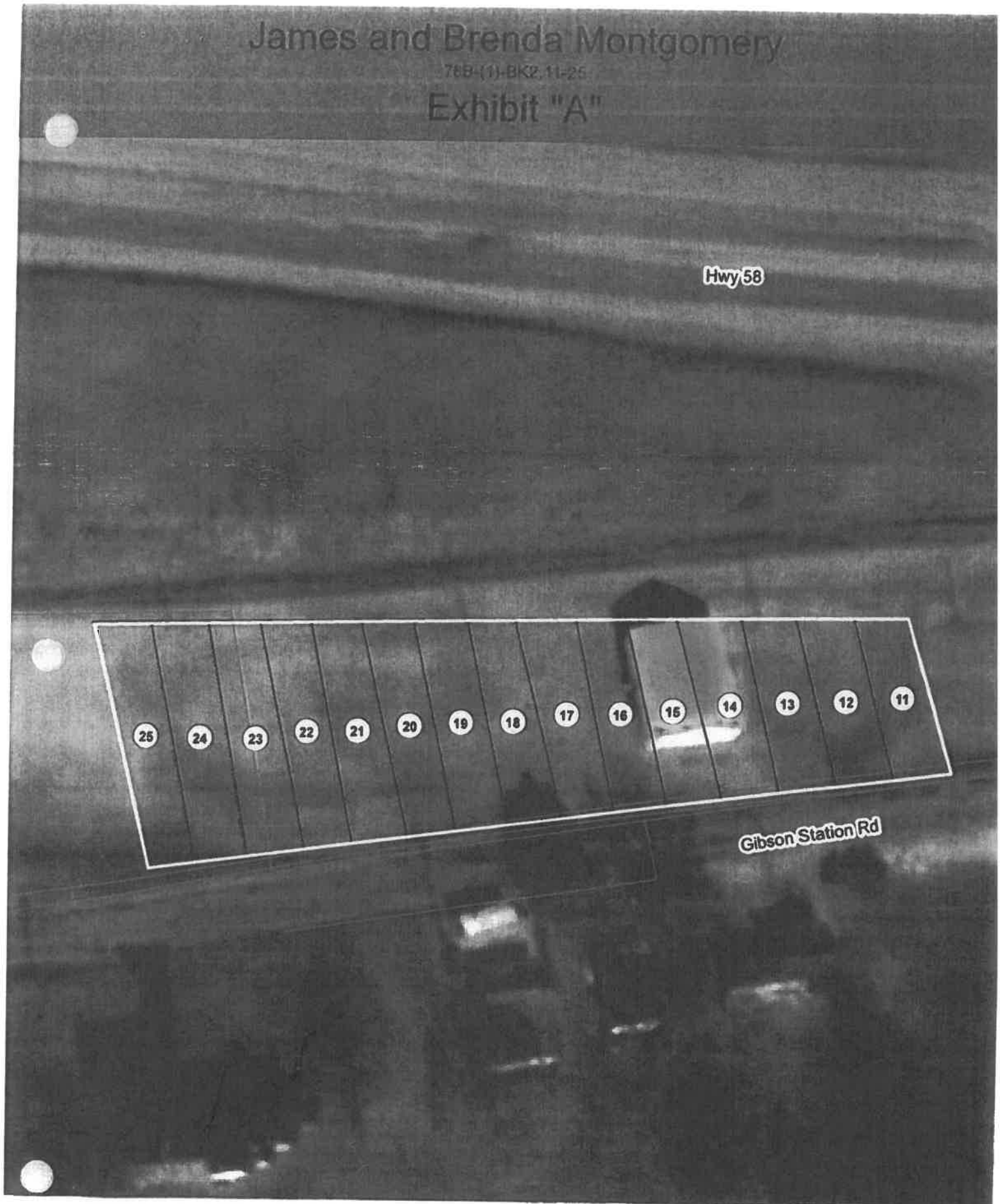
LANDOWNER CONTACT INFORMATION

OWNER (S): James William Montgomery Brenda Montgomery

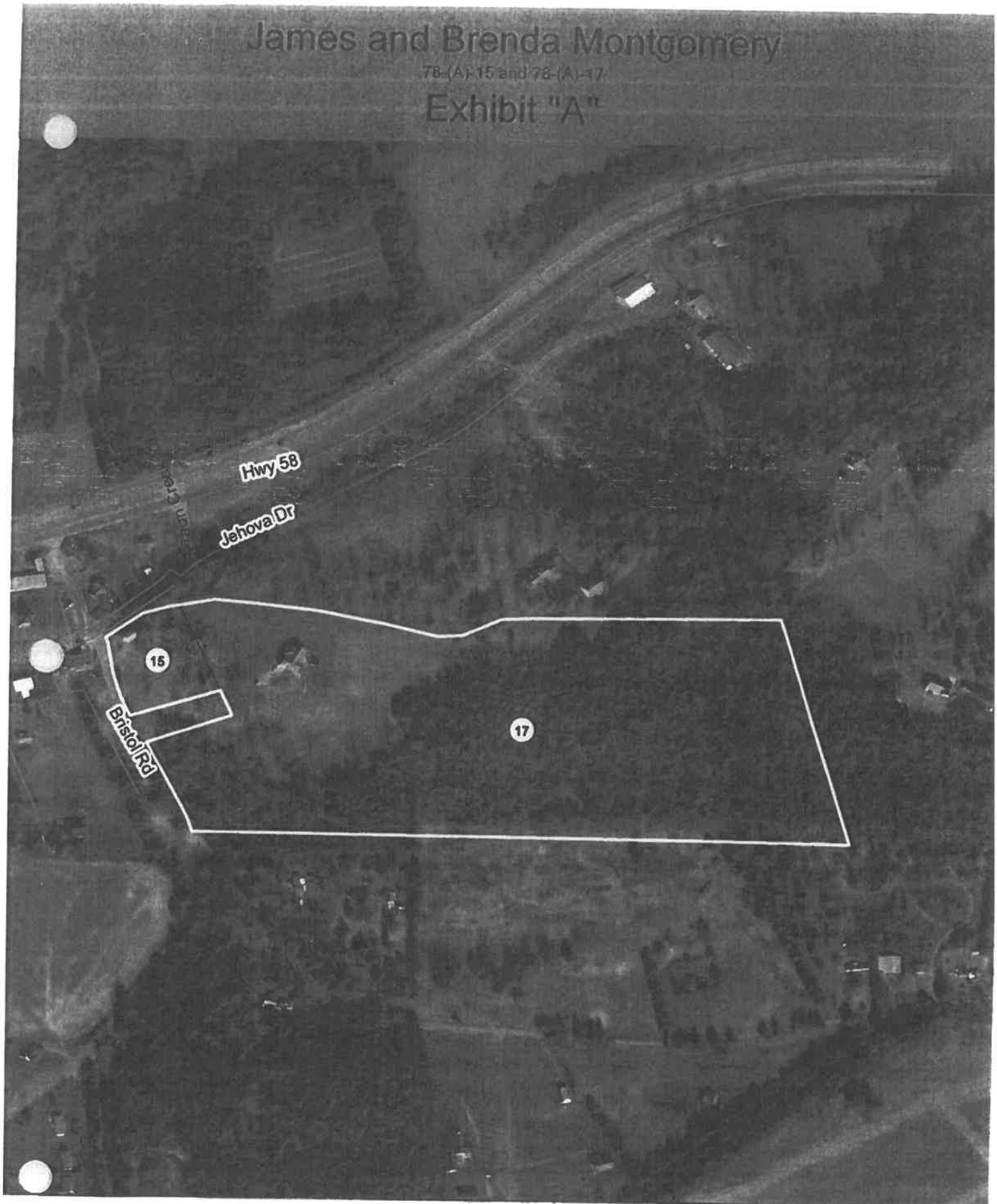
STREET OR (911) ADDRESS OF RIGHT OF ENTRY PROPERTY: 284 Station Creek Rd. Ewing, VA. 24248

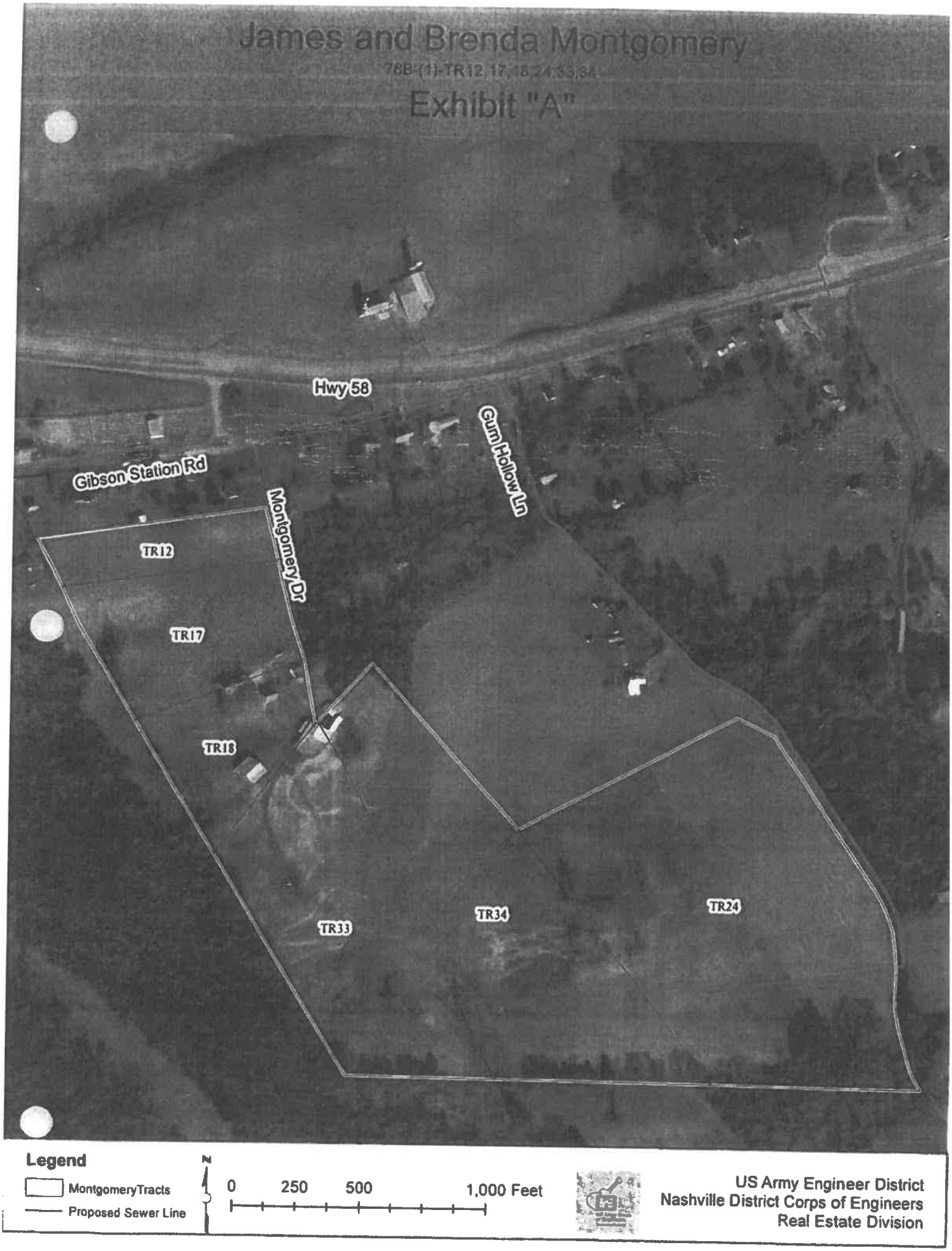
MAILING ADDRESS: Same

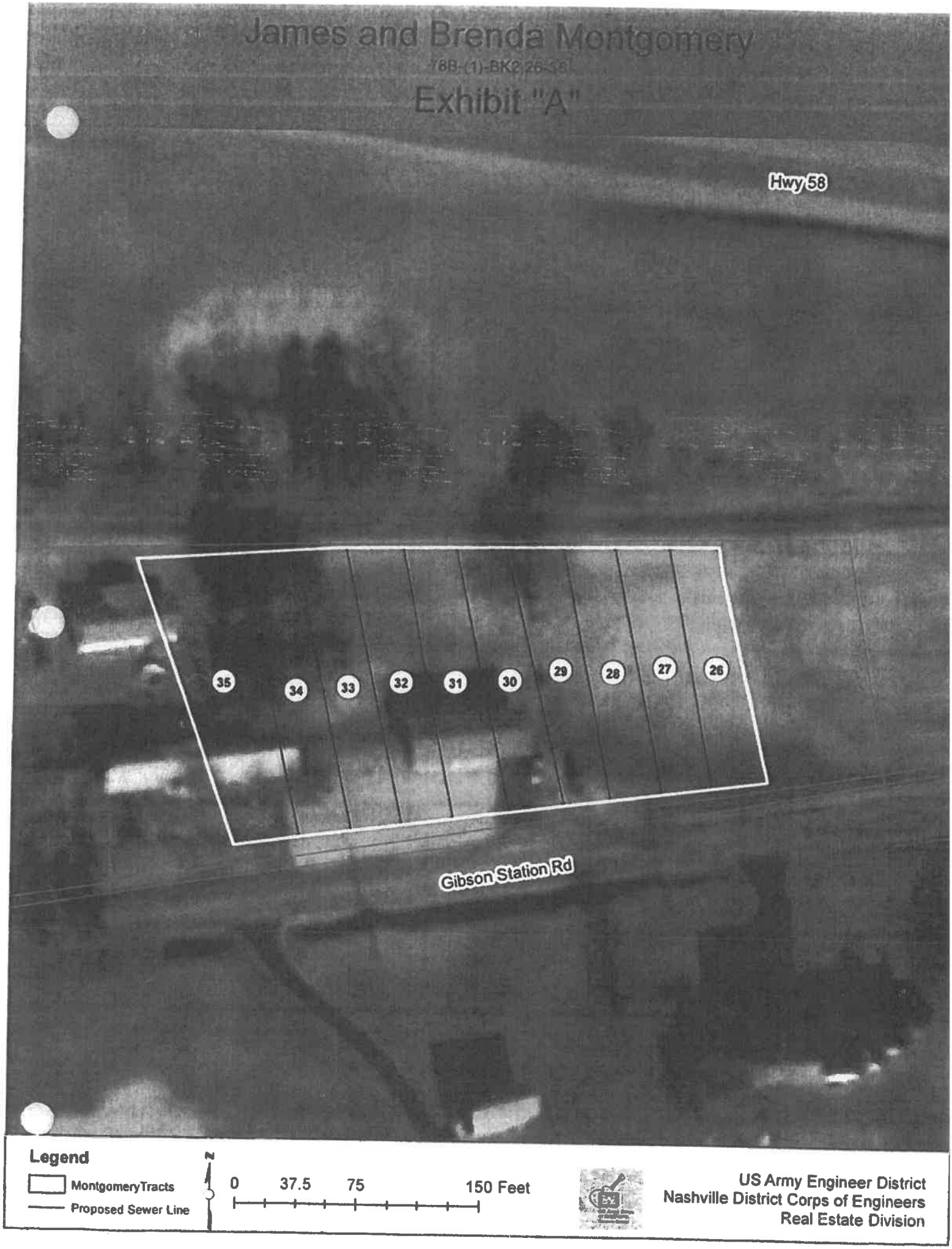
TELEPHONE: 276-861-2212 EMAIL: _____


James and Brenda Montgomery
76B-(1)-BK2.11-25
Exhibit "A"
Hwy 58
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
Gibson Station Rd
Legend
MontgomeryTracts
Proposed Sewer Line
N
0
37.5
75
150 Feet
US Army Engineer District
Nashville District Corps of Engineers
Real Estate Division


Montgomery Tracts
78C-(2)-1 and 78-(A)-14
Exhibit "A"
Station Creek Rd
Bristol Rd
14
1
Legend
MontgomeryTracts
Proposed Sewer Line
N
0
25
50
100 Feet
US Army Engineer District
Nashville District Corps of Engineers
Real Estate Division


James and Brenda Montgomery
78-(A)-15 and 78-(A)-17
Exhibit "A"
Hwy 58
Jehova Dr
15
17
Bristol Rd
Legend
MontgomeryTracts
Proposed Sewer Line
N
0
250
500
1,000 Feet
US Army Engineer District
Nashville District Corps of Engineers
Real Estate Division


James and Brenda Montgomery
78B-(1)-TR12,17,18,24,33,34
Exhibit "A"
Hwy 58
Gum Hollow Ln
Gibson Station Rd
Montgomery Dr
TR12
TR17
TR18
TR33
TR34
TR24
Legend
MontgomeryTracts
Proposed Sewer Line
N
0
250
500
1,000 Feet
US Army Engineer District
Nashville District Corps of Engineers
Real Estate Division


James and Brenda Montgomery
78B-(1)-BK2,26-35
Exhibit "A"
Hwy 58
35
34
33
32
31
30
29
28
27
26
Gibson Station Rd
Legend
MontgomeryTracts
Proposed Sewer Line
N
0
37.5
75
150 Feet
US Army Engineer District
Nashville District Corps of Engineers
Real Estate Division

ATTACHMENT 3

Stream Flows

Flow Data - Powell River at Big Stone Gap - Gage # 03529500 (1944-1981, 2001-2003)

Drainage Area = 112 mi^2

1Q10	=	7.2 cfs	= 4.65 MGD
HF 1Q10	=	14 cfs	= 9.05 MGD
7Q10	=	8.0 cfs	= 5.17 MGD
HF 7Q10	=	18 cfs	= 11.64 MGD
30Q10	=	9.8 cfs	= 6.33 MGD
HF 30Q10	=	36 cfs	= 23.27 MGD

High flow months - Dec-May

Comparative Flows in Indian Creek at Discharge Point:

Drainage Area = 48 mi^2

1Q10	=	$4.65\left(\frac{48}{112}\right)$ MGD	= 2.0 MGD
HF 1Q10	=	$9.05\left(\frac{48}{112}\right)$ MGD	= 3.9 MGD
7Q10	=	$5.17\left(\frac{48}{112}\right)$ MGD	= 2.2 MGD
HF 7Q10	=	$11.64\left(\frac{48}{112}\right)$ MGD	= 5.0 MGD
30Q10	=	$6.33\left(\frac{48}{112}\right)$ MGD	= 2.7 MGD
HF 30Q10	=	$23.27\left(\frac{48}{112}\right)$ MGD	= 10.0 MGD

ATTACHMENT 4

Permit Limitations Development

ID	Date Time	Temp Celsius	Field Ph	Do Probe	Do Winkler	Do Optical
6BIND010.25	1/13/16 12:30	3.99	8.31			13.54
6BIND010.25	1/13/16 12:30	3.99	8.31			13.54
6BIND010.25	1/13/16 12:30	3.99	8.31			13.54
6BIND010.25	2/17/16 13:45	8.14	7.87			11.21
6BIND010.25	2/17/16 13:45	8.14	7.87			11.21
6BIND010.25	2/17/16 13:45	8.14	7.87			11.21
6BIND010.25	3/15/16 13:00	14.63	8.31			10.72
6BIND010.25	3/15/16 13:00	14.63	8.31			10.72
6BIND010.25	3/15/16 13:00	14.63	8.31			10.72
6BIND010.25	4/20/16 13:45	19.63	8.51			11.38
6BIND010.25	4/20/16 13:45	19.63	8.51			11.38
6BIND010.25	4/20/16 13:45	19.63	8.51			11.38
6BIND010.25	5/19/16 11:45	14.91	8.27			10.18
6BIND010.25	5/19/16 11:45	14.91	8.27			10.18
6BIND010.25	5/19/16 11:45	14.91	8.27			10.18
6BIND010.25	6/15/16 13:30	90th % → 21.11	8.32 ← 90th. percentile			9.24
6BIND010.25	6/15/16 13:30	21.11	8.32			9.24
6BIND010.25	6/15/16 13:30	21.11	8.32			9.24
6BIND010.25	7/14/16 13:15	21.4	8.22			9.21
6BIND010.25	7/14/16 13:15	21.4	8.22			9.21
6BIND010.25	7/14/16 13:15	21.4	8.22			9.21
6BIND010.25	8/1/16 14:30	22.56	8.3			9.3
6BIND010.25	8/1/16 14:30	22.56	8.3			9.3
6BIND010.25	8/1/16 14:30	22.56	8.3			9.3
6BIND010.25	9/20/16 13:30	20.7	8.18			8.9
6BIND010.25	9/20/16 13:30	20.7	8.18			8.9
6BIND010.25	9/20/16 13:30	20.7	8.18			8.9
6BIND010.25	10/26/16 13:00	11.38	8.11			10.71
6BIND010.25	10/26/16 13:00	11.38	8.11			10.71
6BIND010.25	10/26/16 13:00	11.38	8.11			10.71
6BIND010.25	11/17/16 13:15	10.05	8.33			11.71
6BIND010.25	11/17/16 13:15	10.05	8.33			11.71
6BIND010.25	11/17/16 13:15	10.05	8.33			11.71
6BIND010.25	12/15/16 13:00	7.42	8.2			12.22
6BIND010.25	12/15/16 13:00	7.42	8.2			12.22
6BIND010.25	12/15/16 13:00	7.42	8.2			12.22

Calculation of Total Ammonia Nitrogen Limits

Facility Name: Western Lee Country WWTP
VPDES Permit No: VA0093076
Stream Name: Indian Creek
Stream Tier Designation: II

NH_3-N limits are derived from the ammonia tables or formulas in the Water Quality Standards. Human Health standards are not applicable for ammonia.

The following stream parameter values are being used for the calculations. The dry season is December - May and the wet season is June - November.

Dry Season pH = 8.3
Wet Season pH = 8.3

Dry Season Temperature (deg.C) = 21
Wet Season Temperature (deg.C) = 14 (assumed)

The ammonia nitrogen water quality standards (WQS) are: (EPA criteria)

Acute: AC_{dry} = 2.0 AC_{wet} = 3.6

Chronic: CC_{dry} = 0.46 CC_{wet} = 0.72

The following flows apply:

Q_e = Design Flow of STP (MGD) = 0.150 MGD
Q_{s-1} = 1Q10 Flow (MGD) = 2.0
Q_{s-1w} = 1Q10 High Flow (MGD) = 3.9
Q_{s-30} = 30Q10 Flow (MGD) = 2.7
Q_{s-30w} = 30Q10 High Flow (MGD) = 10.0

The water quality wasteload allocations (WLAs) are calculated as follows:

f = fraction of stream flow to use from MIX Program -- Assumed complete mix
0.25 antidegredation factor

Acute:

Dry WLA_a = $[AC_{dry}((f)Q_{s-1} + Q_e) - (f)(Q_{s-1})(NH_3\text{-N background})] / (Q_e)$ mg/l
Dry WLA_a = [(2.0)(0.25)(2.0 + 0.150) - ( )( )( )] / (0.150) mg/l
Dry WLA_a = 7.2 mg/l

Wet WLA_a = $[AC_{wet}((f)Q_{s-1w} + Q_e) - (f)(Q_{s-1w})(NH_3\text{-N background})] / (Q_e)$ mg/l
Wet WLA_a = [(3.6)(0.25)(3.9 + 0.150) - ( )( )( )] / (0.150) mg/l
Wet WLA_a = 24.3 mg/l

Chronic:

Dry WLA_c = $[CC_{dry}((f)Q_{s-30} + Q_e) - (f)(Q_{s-30})(NH_3\text{-N background})] / (Q_e)$
Dry WLA_c = [(0.46)(0.25)(2.7 + 0.150) - ( )( )( )] / (0.150 mg/l
Dry WLA_c = 2.2 mg/l

Wet WLA_c = $[CC_{wet}((f)Q_{s-30w} + Q_e) - (f)(Q_{s-30w})(NH_3\text{-N background})] / (Q_e)$
Wet WLA_c = [(0.72)(0.25)(10.0 + 0.150) - ( )( )( )] / (0.150) mg/l
Wet WLA_c = 12.2 mg/l

10/30/2020 10:03:45 AM Stats2.0.4b
Facility: Western Lee County, 0.150, Dry Season
Chemical: Ammonia Nitrogen
Chronic averaging period = 30
WLAa = 7.2
WLAc = 2.2
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics

obsercations = 1
Expected Value = 9.0000
Variance = 29.1600
C.V. = 0.6000
97th percentile daily values = 21.9008
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8545
< Q.L. = 0

Model used: BPJ Assumptions, Type 2 data
Limit needed? : YES
Basis for limits: Chronic Toxicity
Maximum Daily Limit = 4.4389
Weekly Average Limit = 3.2468 ≈ 3.2 mg/l
Monthly Average Limit = 2.4184 ≈ 2.4 mg/l

The data are:
9

10/30/2020 10:10:41 AM Stats2.0.4b
Facility: Western Lee County, 0.150 MGD, Wet Season
Chemical: Ammonia
Chronic averaging period = 30
WLAa = 24.3
WLAc = 12.2
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics

obsercations = 1
Expected Value = 9.0000
Variance = 29.1600
C.V. = 0.6000
97th percentile daily values = 21.9008
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8545
< Q.L. = 0

Model used: BPJ Assumptions, Type 2 data
Limit needed? : NO
Basis for limits: N/A
Maximum Daily Limit = N/A
Weekly Average Limit = N/A
Monthly Average Limit = N/A

The data are:
9

"Model Run For C:\Users\jjc93887\Desktop\Western Lee County Model.mod On 11/5/2020 9:09:13 AM" Dry

"Model is for INDIAN CREEK."
"Model starts at the WESTERN LEE COUNTY WWTP discharge."

"Background Data"

"7Q10",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
2.2,	2,	0,	7.704,	21

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.15,	25,	5.4,	,5,	20

30 BOD_5 NH_3-N: 2.4

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.3,	15,	.608,	.399

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
2.35,	7.531,	8.67,	.663,	8.573,	20.93617

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.313,	11.077,	11.326,	.15,	.161,	0,	0

"Output for Segment 1"
"Segment starts at WESTERN LEE COUNTY WWTP"

"Total",	"Segm."			
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	7.531,	8.67,	.663
.1,	.1,	7.657,	8.629,	.661
.2,	.2,	7.716,	8.588,	.659
.3,	.3,	7.716,	8.547,	.657
.4,	.4,	7.716,	8.506,	.655
.5,	.5,	7.716,	8.465,	.653
.6,	.6,	7.716,	8.424,	.651
.7,	.7,	7.716,	8.384,	.649
.8,	.8,	7.716,	8.344,	.647
.9,	.9,	7.716,	8.304,	.645
1,	1,	7.716,	8.264,	.643
1.1,	1.1,	7.716,	8.224,	.641
1.2,	1.2,	7.716,	8.185,	.639
1.3,	1.3,	7.716,	8.146,	.637

"***SEASONAL RUN***"
"Wet Season is from December to May."
"Model Run For C:\Users\jjc93887\Desktop\Western Lee County Model.mod On 11/5/2020 9:40:05 AM"

"Model is for INDIAN CREEK."
"Model starts at the WESTERN LEE COUNTY WWTP discharge."

"Background Data"

"7Q10",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
5,	2,	0,	8.871,	14

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.15,	25,	20,	,5,	20

30 BOD5 NH3-N:NL

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.3,	15,	1.06621,	.4982408

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
5.15,	8.758,	6.675,	2.144,	9.823,	14.17476

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.23,	11.077,	9.648,	.15,	.096,	0,	0

"Output for Segment 1"
"Segment starts at WESTERN LEE COUNTY WWTP"

"Total",	"Segm."			
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	8.758,	6.675,	2.144
.1,	.1,	8.84,	6.656,	2.141
.2,	.2,	8.84,	6.637,	2.138
.3,	.3,	8.84,	6.618,	2.135
.4,	.4,	8.84,	6.599,	2.132
.5,	.5,	8.84,	6.58,	2.129
.6,	.6,	8.84,	6.561,	2.126
.7,	.7,	8.84,	6.543,	2.124
.8,	.8,	8.84,	6.525,	2.122
.9,	.9,	8.84,	6.507,	2.12
1,	1,	8.84,	6.489,	2.118
1.1,	1.1,	8.84,	6.471,	2.116
1.2,	1.2,	8.84,	6.453,	2.114

1.3, 1.3, 8.84, 6.435, 2.112

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to INDIAN CREEK.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	WESTERN LEE COUNTY WWTP
VPDES Permit No.:	

Discharger Flow Information

Flow:	0.13 MGD
cBOD5:	25 mg/l
TKN:	5.7 mg/l
D.O.:	5 mg/l
Temperature:	20 Degrees C

Geographic Information

Segment Length:	1.3 miles
Upstream Drainage Area:	48 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	1184 Ft.
Downstream Elevation:	1160 Ft.

Hydraulic Information

Segment Width:	15 Ft.
Segment Depth:	0.604 Ft.
Segment Velocity:	0.398 Ft./Sec.
Segment Flow:	2.33 MGD
Incremental Flow:	-2.2 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	50
Percent Riffles:	50
Pool Depth:	0.75 Ft.
Riffle Depth:	0.5 Ft.
Bottom Type:	Large Rock
Sludge:	None
Plants:	None
Algae:	None

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to INDIAN CREEK.

File Information

File Name:	C:\Users\jjc93887\Desktop\Western Lee County Model.mod
Date Modified:	September 24, 2020

Water Quality Standards Information

Stream Name:	INDIAN CREEK
River Basin:	Tennessee/Big Sandy Rivers Basin
Section:	1
Class:	IV - Mountainous Zones Waters
Special Standards:	None

Background Flow Information

Gauge Used:	Indian Creek
Gauge Drainage Area:	48 Sq.Mi.
Gauge 7Q10 Flow:	2.2 MGD
Headwater Drainage Area:	48 Sq.Mi.
Headwater 7Q10 Flow:	2.2 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	4.583333E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	21 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.703755 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	1184 ft above MSL
Model End Elevation:	1160 ft above MSL

Calculation of Total Ammonia Nitrogen Limits

Facility Name: Western Lee Country WWTP
VPDES Permit No: VA0093076
Stream Name: Indian Creek
Stream Tier Designation: II

NH_3-N limits are derived from the ammonia tables or formulas in the Water Quality Standards. Human Health standards are not applicable for ammonia.

The following stream parameter values are being used for the calculations. The dry season is December - May and the wet season is June - November.

Dry Season pH = 8.3
Wet Season pH = 8.3

Dry Season Temperature (deg.C) = 21
Wet Season Temperature (deg.C) = 14 (assumed)

The ammonia nitrogen water quality standards (WQS) are: (EPA criteria)

Acute: AC_{dry} = 2.10 AC_{wet} = 3.6

Chronic: CC_{dry} = 0.46 CC_{wet} = 0.72

The following flows apply:

Q_e = Design Flow of STP (MGD) = 0.300 MGD
Q_{s-1} = 1Q10 Flow (MGD) = 2.0
Q_{s-1w} = 1Q10 High Flow (MGD) = 3.9
Q_{s-30} = 30Q10 Flow (MGD) = 2.7
Q_{s-30w} = 30Q10 High Flow (MGD) = 10.0

The water quality wasteload allocations (WLAs) are calculated as follows:

f = fraction of stream flow to use from MIX Program .. Assumed complete mix
0.25 antidegredation factor

Acute:

Dry WLA_a = $[AC_{dry}((f)Q_{s-1} + Q_e) - (f)(Q_{s-1})(NH_3\text{-N background})] / (Q_e)$ mg/l
Dry WLA_a = [(2.0)(0.25)(2.0 +0.300) - ( )( )( )] / (0.300) mg/l
Dry WLA_a = 3.8 mg/l

Wet WLA_a = $[AC_{wet}((f)Q_{s-1w} + Q_e) - (f)(Q_{s-1w})(NH_3\text{-N background})] / (Q_e)$ mg/l
Wet WLA_a = [(3.6)(0.25)(3.9 +0.300) - ( )( )( )] / (0.300) mg/l
Wet WLA_a = 12.6 mg/l

Chronic:

Dry WLA_c = $[CC_{dry}((f)Q_{s-30} + Q_e) - (f)(Q_{s-30})(NH_3\text{-N background})] / (Q_e)$
Dry WLA_c = [(0.46)(0.25)(2.7 +0.300) - ( )( )( )] / (0.300) mg/l
Dry WLA_c = 1.2 mg/l

Wet WLA_c = $[CC_{wet}((f)Q_{s-30w} + Q_e) - (f)(Q_{s-30w})(NH_3\text{-N background})] / (Q_e)$
Wet WLA_c = [(0.72)(0.25)(10.0 +0.300) - ( )( )( )] / (0.300) mg/l
Wet WLA_c = 6.2 mg/l

9/10/2020 3:57:45 PM Stats2.0.4b
Facility: Lee County WWTP, 0.300 MGD, Dry
Chemical: Ammonia
Chronic averaging period = 30
WLAa = 3.8
WLAc = 1.2
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics

obsercations = 1
Expected Value = 9.0000
Variance = 29.1600
C.V. = 0.6000
97th percentile daily values = 21.9008
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8545
< Q.L. = 0

Model used: BPJ Assumptions, Type 2 data
Limit needed? : YES
Basis for limits: Chronic Toxicity
Maximum Daily Limit = 2.4212
Weekly Average Limit = 1.7710 ≈ 1.8 mg/l
Monthly Average Limit = 1.3191 ≈ 1.3 mg/l

The data are:
9

9/10/2020 4:02:13 PM Stats2.0.4b
Facility: Lee County WWTP, 0.300 MGD, Wet
Chemical: Ammonia
Chronic averaging period = 30
WLAa = 12.6
WLAc = 6.2
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics

obsercations = 1
Expected Value = 9.0000
Variance = 29.1600
C.V. = 0.6000
97th percentile daily values = 21.9008
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8545
< Q.L. = 0

Model used: BPJ Assumptions, Type 2 data
Limit needed? : YES
Basis for limits: Chronic Toxicity
Maximum Daily Limit = 12.5096
Weekly Average Limit = 9.1500 ≈ 9.2 mg/l
Monthly Average Limit = 6.8156 ≈ 6.8 mg/l

The data are:
9

"Model Run For C:\Users\jjc93887\Desktop\Western Lee County II Model.mod On 9/23/2020 10:12:53 AM" Dry

"Model is for INDIAN CREEK."
"Model starts at the WESTERN LEE COUNTY WWTP discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
2.2,	2,	0,	7.704,	21

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.3,	25,	4.3,	6,	20

30 BOD5 1.3 NH3N

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.3,	15,	.631,	.408

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
2.5,	7.499,	11.9,	.675,	8.582,	20.88

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.5,	.521,	11.077,	11.311,	.15,	.161,	0,	0

"Output for Segment 1"
"Segment starts at WESTERN LEE COUNTY WWTP"

"Total", "Segm."				
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	7.499,	11.9,	.675
.1,	.1,	7.581,	11.808,	.673
.2,	.2,	7.651,	11.716,	.671
.3,	.3,	7.711,	11.625,	.669
.4,	.4,	7.724,	11.535,	.667
.5,	.5,	7.724,	11.445,	.665
.6,	.6,	7.724,	11.356,	.663
.7,	.7,	7.724,	11.268,	.661
.8,	.8,	7.724,	11.18,	.659
.9,	.9,	7.724,	11.093,	.657
1,	1,	7.724,	11.007,	.655
1.1,	1.1,	7.724,	10.922,	.653
1.2,	1.2,	7.724,	10.837,	.651
1.3,	1.3,	7.724,	10.753,	.649

"***SEASONAL RUN***"
"Wet Season is from December to May."
"Model Run For C:\Users\jjc93887\Desktop\Western Lee County II Model.mod On 9/23/2020 10:18:46 AM" Wet

"Model is for INDIAN CREEK."
"Model starts at the WESTERN LEE COUNTY WWTP discharge."

"Background Data"

"7Q10",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
5,	2,	0,	8.871,	14

"Discharge/Tributary Input Data for Segment 1"

"Flow",	"cBOD5",	"TKN",	"DO",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
.3,	25,	9.8,	,6,	20

30 BOD5 6.8 NH3N

"Hydraulic Information for Segment 1"

"Length",	"Width",	"Depth",	"Velocity"
"(mi)",	"(ft)",	"(ft)",	"(ft/sec)"
1.3,	15,	1.106543,	.4940628

"Initial Mix Values for Segment 1"

"Flow",	"DO",	"cBOD",	"nBOD",	"DOSat",	"Temp"
"(mgd)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"(mg/l)",	"deg C"
5.3,	8.708,	8.255,	1.667,	9.787,	14.33962

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
.3,	.231,	11.077,	9.685,	.15,	.097,	0,	0

"Output for Segment 1"
"Segment starts at WESTERN LEE COUNTY WWTP"

"Total",	"Segm."			
"Dist.",	"Dist.",	"DO",	"cBOD",	"nBOD"
"(mi)",	"(mi)",	"(mg/l)",	"(mg/l)",	"(mg/l)"
0,	0,	8.708,	8.255,	1.667
.1,	.1,	8.806,	8.231,	1.665
.2,	.2,	8.809,	8.207,	1.663
.3,	.3,	8.809,	8.184,	1.661
.4,	.4,	8.809,	8.161,	1.659
.5,	.5,	8.809,	8.138,	1.657
.6,	.6,	8.809,	8.115,	1.655
.7,	.7,	8.809,	8.092,	1.653
.8,	.8,	8.809,	8.069,	1.651
.9,	.9,	8.809,	8.046,	1.649
1,	1,	8.809,	8.023,	1.647
1.1,	1.1,	8.809,	8,	1.645
1.2,	1.2,	8.809,	7.977,	1.643

1.3, 1.3, 8.809, 7.954, 1.641

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to INDIAN CREEK.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	WESTERN LEE COUNTY WWTP
VPDES Permit No.:	

Discharger Flow Information

Flow:	0.3 MGD
cBOD5:	25 mg/l
TKN:	4.3 mg/l
D.O.:	6 mg/l
Temperature:	20 Degrees C

Geographic Information

Segment Length:	1.3 miles
Upstream Drainage Area:	48 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	1184 Ft.
Downstream Elevation:	1160 Ft.

Hydraulic Information

Segment Width:	15 Ft.
Segment Depth:	0.631 Ft.
Segment Velocity:	0.408 Ft./Sec.
Segment Flow:	2.5 MGD
Incremental Flow:	-2.2 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	Yes
Percent Pools:	50
Percent Riffles:	50
Pool Depth:	0.75 Ft.
Riffle Depth:	0.5 Ft.
Bottom Type:	Large Rock
Sludge:	None
Plants:	None
Algae:	None

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to INDIAN CREEK.

File Information

File Name:	C:\Users\jjc93887\Desktop\Western Lee County Model.mod
Date Modified:	September 24, 2020

Water Quality Standards Information

Stream Name:	INDIAN CREEK
River Basin:	Tennessee/Big Sandy Rivers Basin
Section:	1
Class:	IV - Mountainous Zones Waters
Special Standards:	None

Background Flow Information

Gauge Used:	Indian Creek
Gauge Drainage Area:	48 Sq.Mi.
Gauge 7Q10 Flow:	2.2 MGD
Headwater Drainage Area:	48 Sq.Mi.
Headwater 7Q10 Flow:	2.2 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	4.583333E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	21 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.703755 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	1184 ft above MSL
Model End Elevation:	1160 ft above MSL

ATTACHMENT 5

T & E Species

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

Issuance of VPDES Permit VA0093076 for Western Lee County Wastewater Treatment Plant

4 messages

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov> Thu, Oct 22, 2020 at 9:40 AM
To: "rr ProjectReview (DGIF)" <projectreview@dgif.virginia.gov>, joann_banda@fws.gov

Attached are the T&E Coordination Sheet, Draft Permit and Fact Sheet for this new issuance, for your review and comment.

Frederick M. Wyatt
Virginia Department of Environmental Quality
355-A Deadmore Street
Abingdon, VA 24210

3 attachments

SKM_454e20102110450 (2).pdf
521K

SKM_454e20102109271 (3).pdf
1746K

SKM_454e20102109290 (1) (2).pdf
3882K

Banda, JoAnn <joann_banda@fws.gov> Fri, Oct 23, 2020 at 8:33 AM
To: "Wyatt, Frederick" <frederick.wyatt@deq.virginia.gov>, "rr ProjectReview (DGIF)" <projectreview@dgif.virginia.gov>

Good morning,

At your convenience could you send me the DMR data?

Jo Ann

From: Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>
Sent: Thursday, October 22, 2020 9:40 AM
To: rr ProjectReview (DGIF) <projectreview@dgif.virginia.gov>; Banda, JoAnn <joann_banda@fws.gov>
Subject: [EXTERNAL] Issuance of VPDES Permit VA0093076 for Western Lee County Wastewater Treatment Plant

[Quoted text hidden]

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov> Fri, Oct 23, 2020 at 8:56 AM
To: "Banda, JoAnn" <joann_banda@fws.gov>

We have no DMR data. This is a new issuance and the treatment plant has not been constructed yet..

Frederick M. Wyatt
Virginia Department of Environmental Quality
355-A Deadmore Street
Abingdon, VA 24210

[Quoted text hidden]

Banda, JoAnn <joann_banda@fws.gov> Mon, Oct 26, 2020 at 5:45 PM
To: "Wyatt, Frederick" <frederick.wyatt@deq.virginia.gov>

Frederick-

Thank you for the information you provided and an opportunity to review this permit reissuance. This discharge is not in close proximity to known records or potential habitat of federally listed or proposed species or critical habitat, and no further consultation is necessary. These comments may be reconsidered if the effluent characteristics change, additional biological information (e.g., species sensitivity, distribution, life history, etc.) becomes available, or additional species or critical habitat is federally proposed or listed.

Regards,
Jo Ann

From: Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>
Sent: Thursday, October 22, 2020 9:40 AM
To: rr ProjectReview (DGIF) <projectreview@dgif.virginia.gov>; Banda, JoAnn <joann_banda@fws.gov>
Subject: [EXTERNAL] Issuance of VPDES Permit VA0093076 for Western Lee County Wastewater Treatment Plant

[Quoted text hidden]

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Nathan Burrell
Deputy Director of Government and Community Relations

Thomas L. Smith
Deputy Director of Operations

October 9, 2020

Fred Wyatt
DEQ-SRO
355-A Deadmore Street
Abingdon, VA 24210

Re: VA0093076, Western Lee County Wastewater Treatment Plant

Dear Mr. Wyatt:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Indian Creek – Barnes Hollow Stream Conservation Unit (SCU) is located within the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Indian Creek – Barnes Hollow SCU has been given a biodiversity ranking of B3, which represents a site of high significance. The natural heritage resources associated with this site are:

Pleuronaia barnesiana	Tennessee pigtoe	G2G3/S2/SOC/NL
Elimia arachnoidea	Spider elimia	G2G3/S2/NL/LE

The Tennessee pigtoe is a freshwater mussel which occurs in the Cumberland regions of the Tennessee River in Tennessee, Alabama, and Virginia (NatureServe, 2009). In Virginia, there are records from the Clinch, Powell, and Holston drainages (NatureServe, 2009). Please note this species is designated as a species of concern by the United States Fish and Wildlife Service (USFWS).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

Spider elimia is a freshwater snail species known from small streams in Tennessee and southwestern Virginia (NatureServe, 2014). It has recently been found in tributaries to the Powell River in Lee and western Wise

Counties, VA, and a tributary to the Clinch River, just south of the Virginia border (Dillon and Robinson, 2007). There are historical records from the Holston River drainage in Virginia, but these have not been confirmed in recent years, and possibly may be extirpated (Dillon and Robinson, 2007). It is found in small, rich, hardwater creeks and springfed streams (Dillon, 2006). Eggs are deposited on hard surfaces from spring to mid-summer and it may take up to 2 years to reach maturity (Dillon, 2006).

As with many freshwater snails, poor water quality, including impacts from mining, coal processing, sewage treatment, and deforestation are all potential threats. This species may also be vulnerable to siltation from earth moving activities (Dillon and Robinson, 2007). Please note that this species is currently classified as endangered by the Virginia Department of Wildlife Resources (VDWR).

In addition, Indian Creek has been designated by the VDWR as a "Threatened and Endangered Species Water" for the Spider elimia.

To minimize impacts to aquatic resources, DCR recommends the use of uv/ozone to replace chlorination disinfection and utilization of new technologies as they become available to improve water quality. DCR recommends adoption of the EPA ammonia limits to be protective of freshwater mussels. Due to the legal status of the spider elimia, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Ernie Aschenbach, VDWR
Serena Ciparis, USFWS

Literature Cited

Dillon, R. T., Jr., & J. D. Robinson (2007) The *Goniobasis* ("*Elimia*") of southwest Virginia, I. Population genetic survey. Report to the Virginia Division of Game & Inland Fisheries, 25 pp.

Dillon, R. T., Jr., B.T. Watson,T. W. Stewart & W. K. Reeves. 2006. *The freshwater gastropods of North America.* Internet address: http://www.fwgna.org

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: April 27, 2010).

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: April 1, 2014).

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Web Project ID: WEB0000014001

Client Project Number: VA0093076

PROJECT INFORMATION

TITLE: Western Lee County Wastewater Treatment Plant

DESCRIPTION: Reissuance of VPDES Permit for 0.130 MGD and a future 0.300 MGD sewage treatment plant

EXISTING SITE CONDITIONS: Existing discharge to Indian Creek at river mile 6BIND007.53 with estimated mixing zone at 100 feet.

QUADRANGLES: Wheeler

COUNTIES: Lee

Latitude/Longitude (DMS): 36° 36' 2.6707" N / 83° 34' 59.3228" W

Acreage: 0 acres

Comments: Complete mix calculated using the following flow frequencies: 1Q10: Stream Flow : 2.0 MGD 7Q10 Stream Flow: 2.2 MGD 30Q10 Stream Flow: 2.7 MGD Limits and estimated mixing zone calculated using the following flow frequencies 1Q10: Stream Flow : 2.0 MGD 7Q10 Stream Flow: 2.2 MGD 30Q10 Stream Flow: 2.7 MGD

REQUESTOR INFORMATION

Priority: N

Tier Level: Tier II

Tax ID:

Contact Name: Frederick Wyatt

Company Name: Department of Environmental Quality

Address: 355-A Deadmore Street

City: Abingdon

State: VA

Zip: 24210

Phone: 276-676-4810

Fax:

Email: frederick.wyatt@deq.virginia.gov

Conservation Site	Site Type	Brank	Acreage	Listed Species Presence	Essential Conservation Site?
INDIAN CREEK - BARNES HOLLOW SCU	SCU	B3	21	SL	NO

Natural Heritage Screening Features Intersecting Project Boundary

Site Name	Group Name	Common Name	Scientific Name	GRANK	SRANK	Fed Status	Species of Concern	State Status	EO Rank	Last Obs Date	Precision

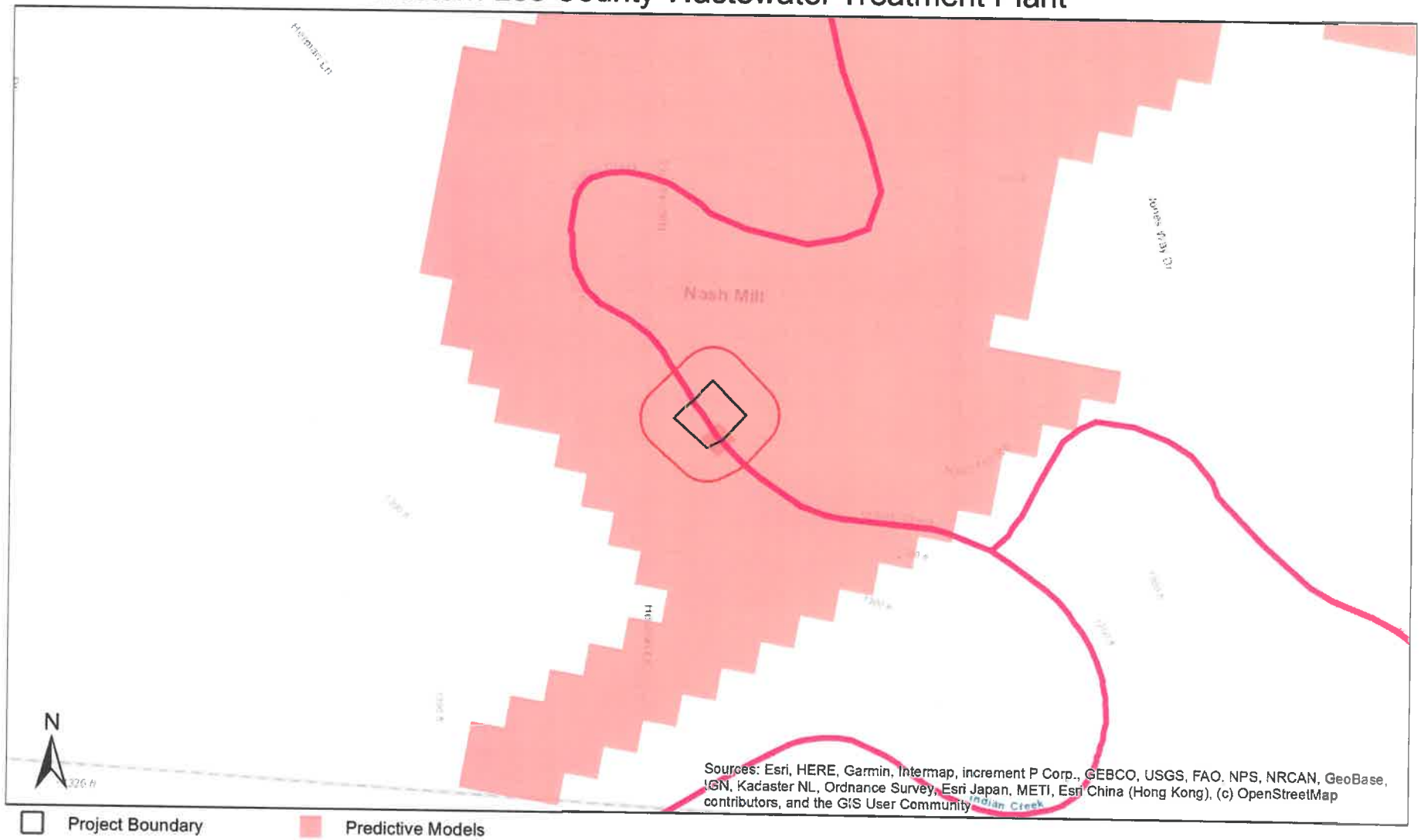
Natural Heritage Resources Intersecting Project Boundary

Intersecting Predictive Models

Spider Elimia
Little Brown Bat
Northern long-eared Myotis
Tricolored Bat
Holsinger's Cave Beetle

Predictive Model Results

Western Lee County Wastewater Treatment Plant



Project Boundary

Buffered Project Boundary

Predictive Models

NH_Screening_Layer

SCU

Quads: Wheeler

Counties: Lee

1:4,514

0 0.0375 0.075 0.15 mi

0 0.05 0.1 0.2 km

Company: Department of Environmental Quality

Lat/Long: 363602 / -833459

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

The project mapped as part of this report has been searched against the Department of Conservation and Recreation's Biotics Data System for occurrences of natural heritage resources from the area indicated for this project. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in Biotics files, NATURAL HERITAGE RESOURCES HAVE BEEN DOCUMENTED within the submitted project boundary including a 100 foot buffer and/or PREDICTED HABITAT MODELS FOR NATURAL HERITAGE RESOURCES intersect the project area.

You have submitted this project to DCR for a more detailed review for potential impacts to natural heritage resources. DCR will review the submitted project to identify the specific natural heritage resources within the proposed project area including a 100 foot buffer. Using the expertise of our biologists, DCR will evaluate whether your specific project is likely to impact these resources. DCR's response will indicate whether any negative impacts are likely and, if so, make recommendations to avoid, minimize and/or mitigate these impacts. If the potential negative impacts are to species that are state- or federally-listed as threatened or endangered, DCR will also recommend coordination with the appropriate regulatory agencies: the Virginia Department of Wildlife Resources for state-listed animals, the Virginia Department of Agriculture and Consumer Services for state-listed plants and insects, and the United States Fish and Wildlife Service for federally listed plants and animals. If your project is expected to have positive impacts we will report those to you with recommendations for enhancing these benefits.

There will be a charge for this service for "for profit companies": $60, plus an additional charge of $35 for 1-5 occurrences and $60 for 6 or more occurrences.

Please allow up to 30 calendar days for a response, unless you requested a priority response of 5 business days at an additional surcharge of $500 or 15 calendar days at an additional surcharge of $300. An invoice will be provided with your response.

We will review the project based on the information you included in the Project Info submittal form, which is included in this report. Also any additional information including photographs, survey documents, etc. attached during the project submittal process and/or sent via email referencing the project title (from the first page of this report).

Thank you for submitting your project for review to the Virginia Natural Heritage Program through the NH Data Explorer. Should you have any questions or concerns about DCR, the Data Explorer, or this report, please contact the Natural Heritage Project Review Unit at 804-371-2708.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY	**VPDES PERMITS** **Threatened and Endangered Species Coordination**
To: ( ) DWR, Environmental Review Coordinator ( ) DCR (X) USFWS, T/E Review Coordinator **From: Fred M. Wyatt** **DEQ, Southwest Regional Office** **355-A Deadmore Street** **Abingdon, VA 24210** **frederick.wyatt@deq.virginia.gov**	**Date Sent: 10/21/2020** **Permit Number: VA0093076**
Facility Name: Western Lee County Wastewater Treatment Plant **Contact: Mr. Tracy Puckett, Executive Director** **Phone: 276-346-7775** **Address: Lee County Public Service Authority** **397 Park Street** **Jonesville, VA 24263**	**Location: East of Intersection of US Route 58 and State Route 693** **USGS Quadrangle: Wheeler, Tenn-VA** **Latitude/Longitude: 36⁰36'02''/83⁰34'59''** **Receiving Stream: Indian Creek** **Receiving Stream Flow Statistics used for Permit: 1Q10 Flow = 2.0 MGD** **7Q10 Flow = 2.2 MGD** **30Q10 Flow = 2.7 MGD** **Draft permit and fact sheet attached.**
Effluent Characteristics and Max Daily Flow: See attached draft permit and fact sheet.	**Species Search Results: Spider Elimia (Elimia arachnoidea)**

DGIF email: ProjectReview@dwr.virginia.gov to Ernie Aschenbach attention.

USFWS email: joann_banda@fws.gov

DCR: Natural Heritage Data Explorer (NHDE) has the needed information.

Threatened and Endangered Waters

36,36,01.9 -83,34,58.9 is the Search Point

Show Position Rings
◉ Yes ○ No
1/2 mile and 1/8 mile at the Search Point

Show Search Area
◉ Yes ○ No
2 Search distance miles radius

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, TEWaters

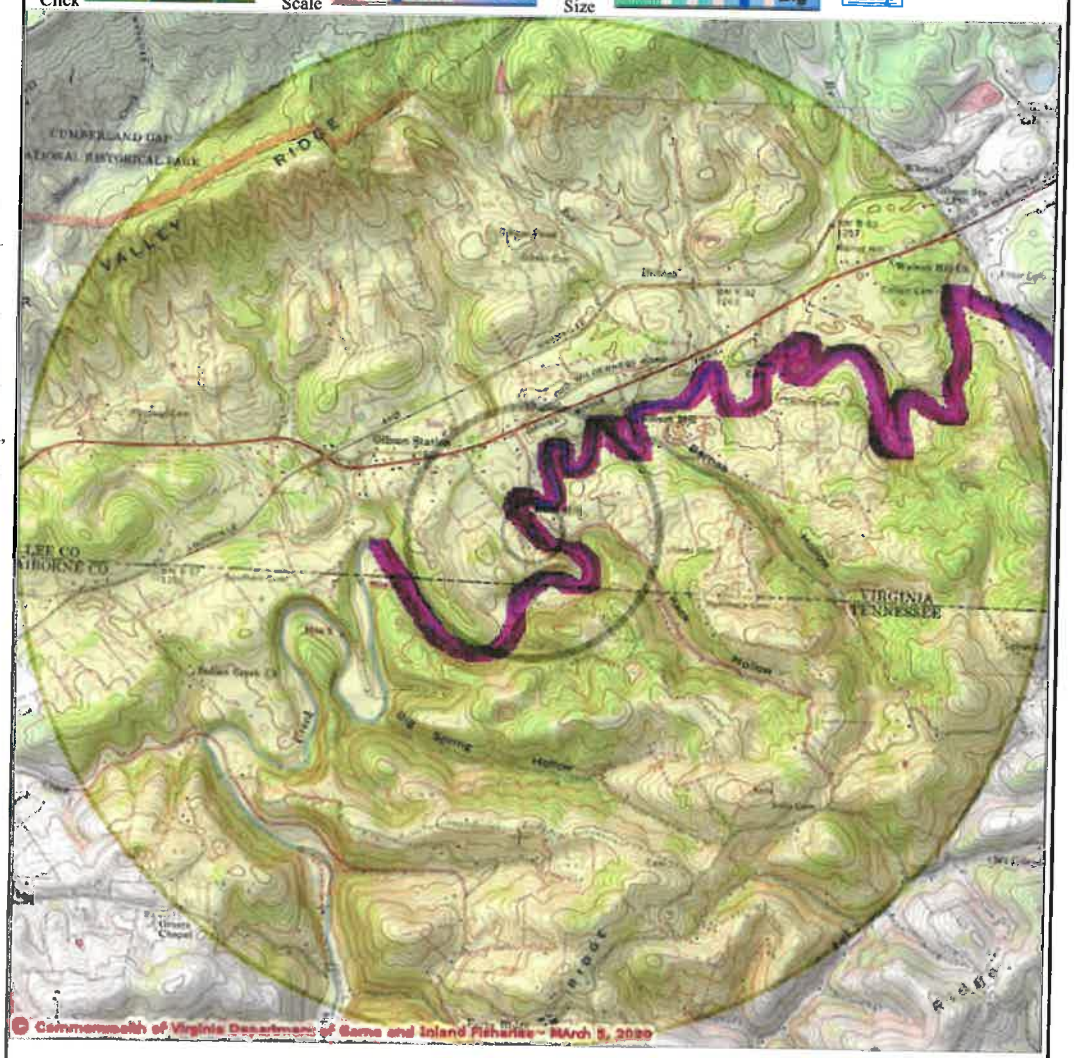
Map Overlay Legend

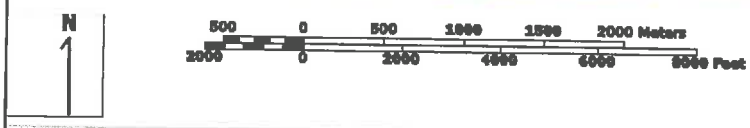
T & E Waters
Federal
State

Position Rings 1/2 mile and 1/8 mile at the Search Point

2 mile radius Search Area

back | Map Click Pan | Map Scale In Zoom Out | Refresh Browser Page | Screen Size Small Size Big | Help





Point of Search 36,36,01.9 -83,34,58.9
Map Location 36,36,01.9 -83,34,58.9

Select **Coordinate System:**
◉ Degrees,Minutes,Seconds Latitude - Longitude
○ Decimal Degrees Latitude - Longitude
○ Meters UTM NAD83 East North Zone
○ Meters UTM NAD27 East North Zone

Base Map source: Topographic maps from TOPO! copyright 2006 (see National Geographic Maps for details)

Map projection is UTM Zone 17 NAD 1983 with left 265753 and top 4056868. Pixel size is 8 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West.Map is currently displayed as 800 columns by 800 rows for a total of 640000 pixles. The map display represents 6400 meters east to west by 6400 meters north to south for a total of 40.9 square kilometers. The map display represents 21000 feet east to west by 21000 feet north to south for a total of 15.8 square miles.

VaFWIS Initial Project Assessment Report Compiled on 3/5/2020, 3:46:09 PM

Help

Known or likely to occur within a **2 mile radius around point 36.6005500 -83.5830496** in **105 Lee County, VA**

View Map of Site Location

533 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 64) (64 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050023	FESE	Ia	Bat, Indiana	Myotis sodalis	Yes	BOVA,SppObs
060169	FESE	Ia	Bean, Tennessee	Venustaconcha trabalis		BOVA
060030	FESE	Ia	Combshell, Cumberlandian	Epioblasma brevidens		BOVA
060023	FESE	Ia	Fanshell	Cyprogenia stegaria		BOVA
060125	FESE	Ia	Monkeyface (pearlymussel), Appalachian	Theliderma sparsa		BOVA
060123	FESE	Ia	Monkeyface (pearlymussel), Cumberland	Theliderma intermedia		BOVA
060031	FESE	Ia	Mussel, oyster	Epioblasma capsaeformis		BOVA
060035	FESE	Ia	Mussel, snuffbox	Epioblasma triquetra		BOVA
060020	FESE	Ia	Pearlymussel, birdwing	Lemiox rimosus		BOVA
060024	FESE	Ia	Pearlymussel, dromedary	Dromus dromas		BOVA
060051	FESE	Ia	Pigtoe, finerayed	Fusconaia cuneolus		BOVA
060052	FESE	Ia	Pigtoe, shiny	Fusconaia cor		BOVA
060122	FESE	Ia	Rabbitsfoot, rough	Theliderma cylindrica		BOVA
060082	FESE	Ib	Pearlymussel, cracking	Hemistena lata		BOVA
060094	FESE	Ic	Pearlymussel, littlewing	Pegias fabula		BOVA
050021	FESE	IIa	Bat, gray	Myotis grisescens	Yes	BOVA,SppObs
060146	FESE	IIa	Bean, Rayed	Villosa fabalis		BOVA
060121	FESE	IIa	Kidneyshell, fluted	Ptychobranchus subtentus		BOVA
060110	FESE	IIa	Mussel, sheepnose	Plethobasus cyphyus		BOVA
060083	FESE	IIa	Pearlymussel, slabside	Pleuronaia dolabelloides		BOVA
070048	FESE	IIIc	Isopod, Lee County Cave	Lirceus usdagalun		BOVA
010331	FTST	Ia	Madtom, yellowfin	Noturus flavipinnis		BOVA,Habitat
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis	Yes	BOVA,SppObs
010330	FTST	Ib	Chub, spotfin	Erimonax monachus		BOVA
010111	FTST	Ic	Chub, slender	Erimystax cahni		BOVA
010450	FTST		Dace, Blackside	Chrosomus cumberlandensis		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus	Yes	BOVA,SppObs
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus	Yes	BOVA,SppObs
060170	SE	Ia	Ghostsnail, thankless	Holsingeria unthanksensis		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
060080	SE	IIa	Heelsplitter, Tennessee	Lasmigona holstonia		BOVA,Habitat
060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes	BOVA,TEWaters,Habitat
060027	SE	IIIa	Elephantear	Elliptio crassidens		BOVA
060168	SE	IIIb	Deertoe	Truncilla truncata		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
060069	ST	IIIa	Riversnail, spiny	Io fluvialis		BOVA
060086	ST	IIIa	Sandshell, black	Ligumia recta		BOVA
060140	ST	IIIb	Pistolgrip	Tritogonia verrucosa		BOVA
010335	ST	IIIc	Shiner, steelcolor	Cyprinella whipplei		BOVA
060124	ST	IVb	Pimpleback	Cyclonaias pustulosa		BOVA
010362	ST	IVc	Darter, western sand	Ammocrypta clara		BOVA
010334	ST	IVc	Paddlefish	Polyodon spathula		BOVA
010076	ST	IVc	Shiner, emerald	Notropis atherinoides		BOVA
060163	ST	IVc	Papershell, fragile	Leptodea fragilis		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
020020	CC	Ia	Hellbender, eastern	Cryptobranchus alleganiensis alleganiensis		BOVA
020030	CC	IIb	Salamander, green	Aneides aeneus		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2020-03-05 15:42:19 (qa/qc March 21, 2016 12:20 - tn=1018687.0 dist=3218 I)
$poi=36.6005500 -83.5830496

040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
050024		Ia	Myotis, eastern small-footed	Myotis leibii	Yes	BOVA,SppObs
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA
070139		Ic	Amphipod, Cumberland Gap Cave	Bactrurus angulus		BOVA
010341		IIa	Logperch, blotchside	Percina burtoni	Yes	BOVA,SppObs
020011		IIa	Frog, mountain chorus	Pseudacris brachyphona		BOVA,Habitat
040052		IIa	Duck, American black	Anas rubripes		BOVA
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA
040140		IIa	Woodcock, American	Scolopax minor		BOVA
060050		IIa	Pigtoe, Tennessee	Pleuronaia barnesiana	Yes	BOVA,Habitat,SppObs
070146		IIa	Crayfish, Spiny Scale	Cambarus jezerinaci		BOVA
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
010075		IIc	Shiner, popeye	Notropis ariommus		BOVA
020081		IIc	Salamander, southern zigzag	Plethodon ventralis		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA
060004		IIc	Elktoe	Alasmidonta marginata		BOVA

To view All 533 species View 533

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

(Testing) Bat Bachelor Colonies, Bat Maternity Colonies, and Bat Hibernacula View Map of all these Colonies and Hibernacula

ID	Name	Type	Notes	View Map
373	Young-Fugate	Both	MYGR Only Summer for MYGR Summer-T&E	Yes

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (11 Reaches) View Map of All Threatened and Endangered Waters

Stream Name	T&E Waters Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Indian Creek (0301010)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0302894)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0303028)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0306006)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0306967)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0307070)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0311451)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0311563)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0318734)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0320039)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
Indian Creek (0321977)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (6 Reaches)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species					View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name				
Bee Branch (60102061)	SE	060050		IIa	Pigtoe, Tennessee	Pleuronaia barnesiana	Yes
		060055	SE	IIc	Elimia, spider	Elimia arachnoidea	
		060080	SE	IIa	Heelsplitter, Tennessee	Lasmigona holstonia	
Indian Creek (60102061)	FTSE	010331	FTST	Ia	Madtom, yellowfin	Noturus flavipinnis	Yes
		060050		IIa	Pigtoe, Tennessee	Pleuronaia barnesiana	
		060055	SE	IIc	Elimia, spider	Elimia arachnoidea	
		060080	SE	IIa	Heelsplitter, Tennessee	Lasmigona holstonia	
Indian Creek (60102061)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
		060080	SE	IIa	Heelsplitter, Tennessee	Lasmigona holstonia	
Pendleton Branch (60102061)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
tributary (60102061)	SE	060050		IIa	Pigtoe, Tennessee	Pleuronaia barnesiana	Yes
		060055	SE	IIc	Elimia, spider	Elimia arachnoidea	
		060080	SE	IIa	Heelsplitter, Tennessee	Lasmigona holstonia	
tributary (60102061)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes
tributary (60102061)	SE	060055	SE	IIc	Elimia, spider	Elimia arachnoidea	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
020011		IIa	Frog, mountain chorus	Pseudacris brachyphona	Yes

Public Holdings: (1 names)

Name	Agency	Level
Cumberland Gap National Historical Park	National Park Service	Federal

Compiled on 3/5/2020, 3:46:09 PM 11018687,0 report=IPA searchType= R dist= 3218 poi= 36.6005500 -83.5830496

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ATTACHMENT 6

303 (d) Fact Sheets

TMDL

Commonwealth of Virginia

Wyatt, Frederick <frederick.wyatt@deq.virginia.gov>

VA0093076

1 message

Chapman, Martha <martha.chapman@deq.virginia.gov> Mon, Mar 9, 2020 at 10:29 AM
To: Frederick Wyatt <frederick.wyatt@deq.virginia.gov>

Fred,
Attached are the T&E map and list.

The proposed outfall will discharge to Indian Creek on segment VAS-P24R_IND01A00. The 2018 Water Quality Assessment lists this segment as impaired for failure to support the recreational use. Station 6BIND009.12 had 50% and station 6BIND010.25 had 41% of samples exceed the water quality standard for E.coli.

I have also attached the factsheet.

There is no TMDL developed for this watershed.

Let me know if you have any questions.
Thanks,
Martha

--
Martha Chapman
Water Monitoring & Assessment Scientist
Southwest Regional Office
Virginia Department of Environmental Quality
355A Deadmore Street
Abingdon, VA 24210
Direct: (276) 676-4845

3 attachments

VA0093076_VAFWIS_Map.pdf
174K

VA0093076_VAFWIS_TandEList.pdf
48K

Factsheet_P24R_IND01A00.pdf
14K

Fact Sheets for Impaired (Category 4 or 5) Waters in 2018

Tennessee and Big Sandy River Basins

Cause Group Code: **P24R-01-BAC** **Indian Creek**

Cause Location: This segment includes the mainstem from the confluence of Machine Branch downstream to the Tennessee political boundary and the mainstem from Ketron Mill to just south of Elydale School

City / County: Lee Co.

Use(s): Recreation

Cause(s) / VA Category: Escherichia coli / 5A

The AWQM station located at 6BIND009.12 had a 50% exceedance and station 6BIND010.25 had a 41% exceedance of the E.coli water quality standard.

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAS-P24R_IND01A00 / Indian Creek / Mainstem from the confluence of Machine Branch downstream to the Tennessee state line, near Gibson Station, WQS Section 1.	5A	Escherichia coli	2008	M	8.18
VAS-P24R_IND02A14 / Indian Creek / Indian Creek mainstem from the Meek Branch confluence, near Caylor, downstream to the confluence of Machine Branch, near Elydale, WQS Section 1.	5A	Escherichia coli	2014	M	4.44

Indian Creek **Recreation**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			**12.62**

Sources:

Sewage Discharges in Unsewered Areas

Unrestricted Cattle Access

ATTACHMENT 7

Water Quality Criteria Monitoring Data (Attachment A)

		HARDNESS	200.00
ACUTE	COPPER ug/l	WQSACUTE	25.8
CHRONIC		WQSCHRONIC	16.2

FORMULA UPDATED FOR 06/2017 WQS LEAD ONLY, NO CHANGE

		HARDNESS	200.00
ACUTE	LEAD ug/l	WQSACUTE	198.28
CHRONIC		WQSCHRONIC	22.53

		HARDNESS	200.00
ACUTE	ZINC ug/l	WQSACUTE	215.57
CHRONIC		WQSCHRONIC	215.57

		HARDNESS	200.00
ACUTE	CADMIUM ug/l	WQSACUTE	8.57
CHRONIC		WQSCHRONIC	1.95

		HARDNESS	200.00
ACUTE	CHROMIUM III ug/l	WQSACUTE	1005.17
CHRONIC		WQSCHRONIC	130.75

		HARDNESS	200.00
ACUTE	NICKEL ug/l	WQSACUTE	327.79
CHRONIC		WQSCHRONIC	36.43

		HARDNESS	200.00
ACUTE	SIVER ug/l	WQSACUTE	11.37

Western Lee County WWTP
Metals Calculations for Attachment A

WLA Formula = chronic standard (7Q10 + effluent flow) / eff. flow

Antimony: WLA = 640 (2.2 + 0.150) / 0.150 ug/l = ~~10,029~~ 500 ug/l

Arsenic: WLA = 150 (2.2 + 0.150) / 0.150 ug/l = ~~2,351~~ 500 ug/l

Cadmium: WLA = 1.95 (2.2 + 0.150) / 0.150 ug/l = 31 ug/l

Chronium III: WLA = 130.75 (2.2 + 0.150) / 0.150 ug/l = ~~2,049~~ 500 ug/l

Chronium VI: WLA = 11 (2.2 + 0.150) / 0.150 ug/l = ~~172~~ 150 ug/l

Copper: WLA = 16.2 (2.2 + 0.150) / 0.150 ug/l = ~~254~~ 250 ug/l

Lead: WLA = 22.53 (2.2 + 0.150) / 0.150 ug/l = ~~353~~ 350 ug/l

Mercury: WLA = 0.77 (2.2 + 0.150) / 0.150 ug/l = 12 ug/l

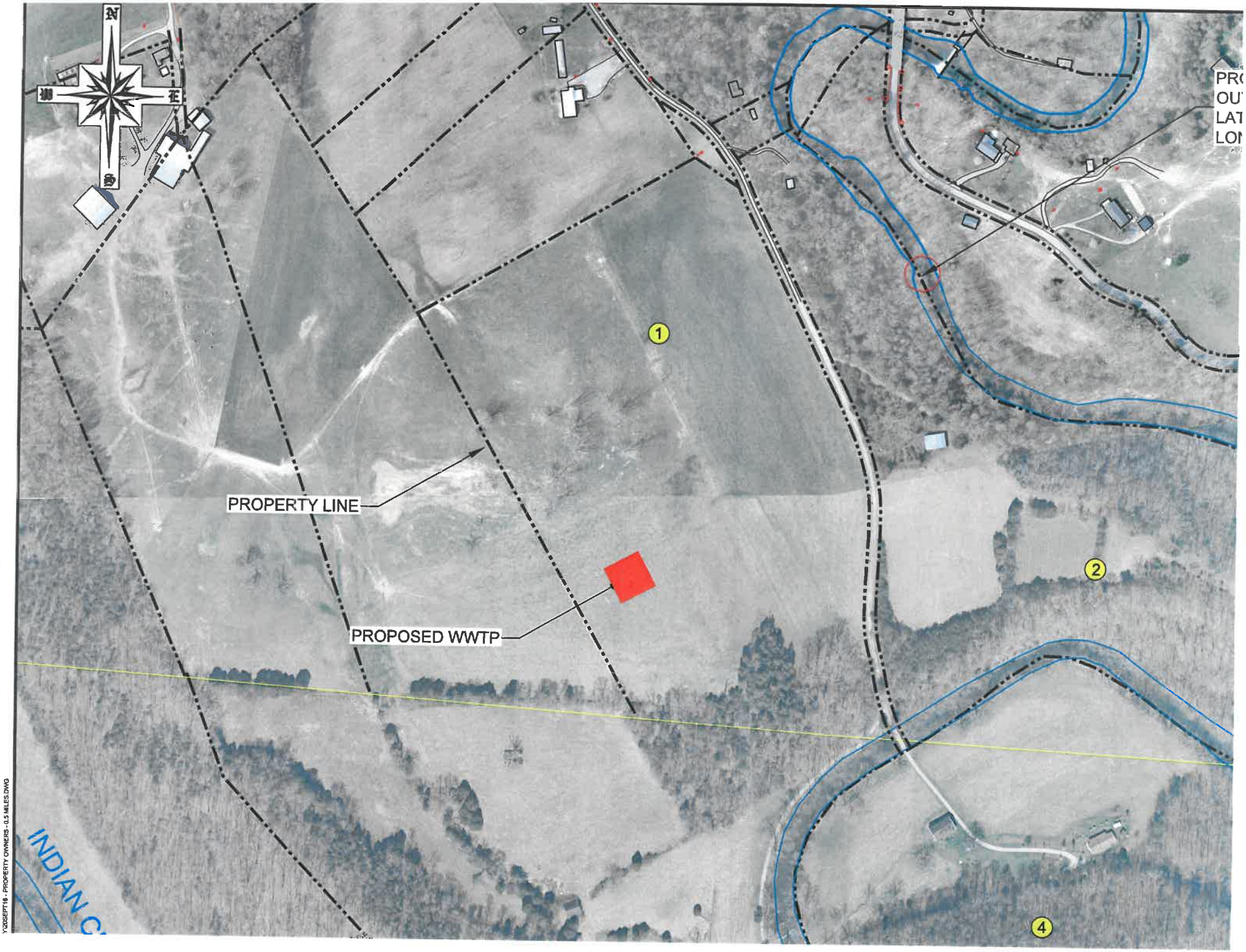
Selenium: WLA = 5.0 (2.2 + 0.150) / 0.150 ug/l = 78 ug/l

Silver: WLA = 11.37 (2.10 + 0.150) / 0.150 ug/l = ~~105~~ 150 ug/l (acute, 1Q10 & 7Q10)

Zinc: WLA = 215.57 (2.2 + 0.150) / 0.150 ug/l = ~~3,378~~ 500 ug/l

Nickel: WLA = 36.43 (2.2 + 0.150) / 0.150 ug/l = ~~571~~ 500 ug/l

Thallium: WLA = 0.47 (2.2 + 0.150) / 0.150 ug/l = 7.4 ug/l



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VA0093076 Western Lee County WWTP

ION STATUS

Supporting

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Supporting

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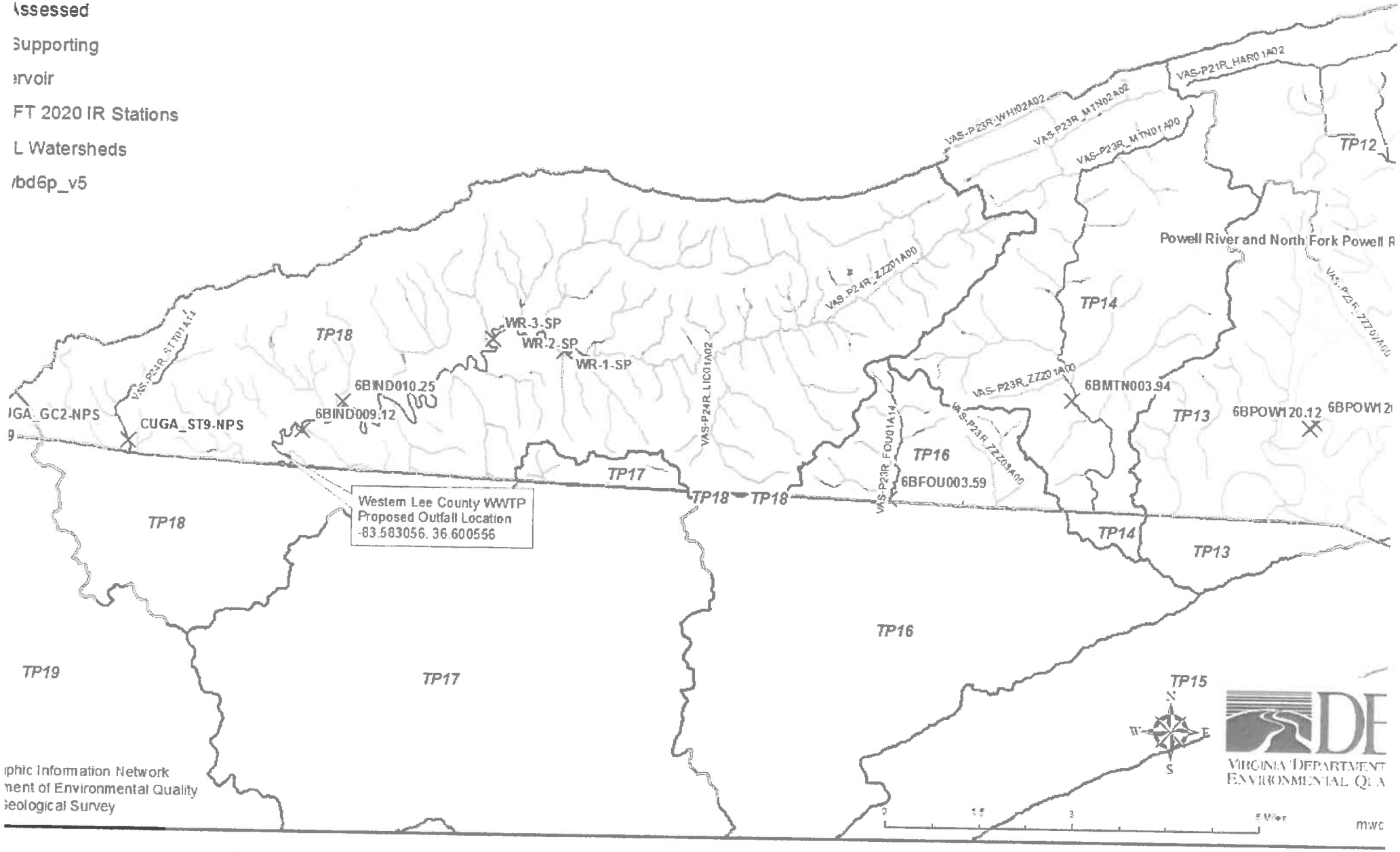
FT 2020 IR Stations

L Watersheds

bd6p_v5



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY	**VPDES PERMITS** **Threatened and Endangered Species Coordination**
To: ( ) DWR, Environmental Review Coordinator ( ) DCR (X) USFWS, T/E Review Coordinator **From: Fred M. Wyatt** **DEQ, Southwest Regional Office** **355-A Deadmore Street** **Abingdon, VA 24210** **frederick.wyatt@deq.virginia.gov**	**Date Sent: 09/17/2020** **Permit Number: VA0093076**
Facility Name: Western Lee County Wastewater Treatment Plant **Contact: Mr. Tracy Puckett, Executive Director** **Phone: 276-346-7775** **Address: Lee County Public Service Authority** **397 Park Street** **Jonesville, VA 24263**	**Location: Near Intersection of US Route 58E and Route 691 (Wheeler Road)** **USGS Quadrangle: Wheeler, Tenn-VA** **Latitude/Longitude: $36^0$36'02''/$83^0$34'59''** **Receiving Stream: Indian Creek** **Receiving Stream Flow Statistics used for Permit: 1Q10 Flow = 2.0 MGD** **7Q10 Flow = 2.2 MGD** **30Q10 Flow = 2.7 MGD** **Draft permit and fact sheet attached.**
Effluent Characteristics and Max Daily Flow: See attached draft permit and fact sheet.	**Species Search Results: Spider Elimia (Elimia arachnoidea)**

DGIF email: ProjectReview@dgif.virginia.gov to Ernie Aschenbach attention.

USFWS email: joann_banda@fws.gov

DCR: Natural Heritage Data Explorer (NHDE) has the needed information.

WESTERN LEE SEWER - WWTP ADJACENT PROPERTY INFORMATION					
MAP NO.	OWNER	TAX MAP / PARCEL NO.	ADDRESS	CITY & STATE	ZIP
1	MONTGOMERY, JAMES W	78B-(1)-TR24	284 STATION CREEK RD	EWING, VA	24248
2	BIGELOW, ADAM	78B-(1)-TR25B	318 HERMAN LN	EWING, VA	24248
3	LOWE, KYLE E	79-(A)-19	505 NASH MILL RD	EWING, VA	24248
4	SANDIFER, CLAUDE E & SHIRLEY L	003 021.00	455 GUM HOLLOW LANE	HARROGATE, TN	37752
5	POLNOW, CYNTHIA LOU	003 020.00	390 GUM HOLLOW LANE	HARROGATE, TN	37752
6	GREENE, NORMA P	003 018.00	P.O. BOX 4099	HARROGATE, TN	37752
7	GREENE, GERALD L & NORMA	78-(A)-36	P.O. BOX 4100	HARROGATE, TN	37752

Western Lee County WWTP: VA0093076
Water Quality Criteria/Wasteload Allocation

25 September, 2020

Input Parameters:

Facility Information

Facility Name:	Western Lee County WWTP
Permit Number:	Indian Creek
Receiving Stream:	VA0093076
Analysis Type:	Freshwater

Stream Information

Mean Hardness (as $CaCO_3$):	200 mg/L
90% Temperature (Annual):	21 °C
90% Temperature (Wet Season):	14 °C
90% Maximum pH:	8.3 SU
10% Maximum pH:	8.5 SU
Tier Designation (1 or 2):	2
Public Water Supply (PWS)?	No
Trout Present?	No
Mussels Present?	Yes
Early Life Stages Present?	Yes
New Ammonia Criteria?	Yes

Stream Flows

1Q10 (Annual):	2 MGD (100% Used)
7Q10 (Annual):	2.2 MGD (100% Used)
30Q10 (Wet Season):	2.7 MGD (100% Used)
30Q5:	2.5 MGD
Harmonic Mean:	12 MGD
1Q10 (Wet Season):	3.9 MGD (100% Used)
30Q10 (Wet Season):	10 MGD (100% Used)

Effluent Information

Mean Hardness (as $CaCO_3$):	200 mg/L
90% Temperature (Annual):	20 °C
90% Temperature (Wet Season):	15 °C
90% Maximum pH:	8 SU
10% Maximum pH:	8.2 SU
Discharge Flow:	0.13 MGD

Notes:

1. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals.
2. Metals measured as Dissolved, unless specified otherwise.
3. Regular WLA are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
4. Antidegradation Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic.
   Antidegradation Baseline = (0.10(WQC - background conc.) + background conc.) for human health.
5. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio-1), effluent equal to 1 and 100% mix.
6. The following water effect ratios (WERs) were applied to metal water quality criteria computations: Cd = 1 , Cr = 1 , Cu = 1 , Pb = 1 , Ni = 1 , Ag = 1 , Zn = 1
7. Mussel presence likelihood estimator tool was not used.

Western Lee County WWTP: VA0093076
Water Quality Criteria/Wasteload Allocation

25 September, 2020

Input Parameters:

Facility Information

Facility Name:	Western Lee County WWTP
Permit Number:	Indian Creek
Receiving Stream:	VA0093076
Analysis Type:	Freshwater

Stream Information

Mean Hardness (as $CaCO_3$):	200 mg/L
90% Temperature (Annual):	21 °C
90% Temperature (Wet Season):	14 °C
90% Maximum pH:	8.3 SU
10% Maximum pH:	8.5 SU
Tier Designation (1 or 2):	2
Public Water Supply (PWS)?	No
Trout Present?	No
Mussels Present?	Yes
Early Life Stages Present?	Yes
New Ammonia Criteria?	Yes

Stream Flows

1Q10 (Annual):	2 MGD (100% Used)
7Q10 (Annual):	2.2 MGD (100% Used)
30Q10 (Wet Season):	2.7 MGD (100% Used)
30Q5:	2.5 MGD
Harmonic Mean:	12 MGD
1Q10 (Wet Season):	3.9 MGD (100% Used)
30Q10 (Wet Season):	10 MGD (100% Used)

Effluent Information

Mean Hardness (as $CaCO_3$):	200 mg/L
90% Temperature (Annual):	20 °C
90% Temperature (Wet Season):	15 °C
90% Maximum pH:	8 SU
10% Maximum pH:	8.2 SU
Discharge Flow:	0.13 MGD

WATER QUA

Facility Name: Western Lee County WWTP

Permit No.:

Receiving Stream: Indian Creek

Stream Information:

Mean Hardness (as CaCO3) =	200	mg/L
90% Temperature (Annual) =	21	deg C
90% Temperature (Wet Season) =	14	deg C
90% Maximum pH =	8.3	SU
10% Maximum pH =	8.5	SU
Tier Designation (1 or 2) =	2	
Public Water Supply (PWS)?	No	
Trout Present?	No	
Mussels Present?	Yes	
Early Life Stages Present?	Yes	
New Ammonia Criteria?	Yes	

Stream Flows:

1Q10 (Annual) =	2
7Q10 (Annual) =	2.2
30Q10 (Wet Season) =	2.7
30Q5	2.5
Harmonic Mean =	12
1Q10 (Wet Season) =	3.9
30Q10 (Wet Season) =	10

Parameter (Units)	Background Conc.	Water Quality Criteria				Wasteload	
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic
Ammonia (Yearly) (mg/l)	0	2.13	0.47			34.88	10.28
Ammonia (High Flow) (mg/l)	0	3.70	0.72			114.64	56.33

NOTES:

1. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals.
2. Metals measured as Dissolved, unless specified otherwise.
3. Regular WLA are mass balances (minus background concentration) using the % of stream flow entered above under Mixing I
4. Antidegradation Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic.
Antidegradation Baseline = (0.10(WQC - background conc.) + background conc.) for human health.
5. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5
6. The following water effect ratios (WERs) were applied to metal water quality criteria computations: Cd = 1, Cr = 1, Cu = 1, Pb
7. Mussel presence likelihood estimator tool was not used.

Parm Name	Storet Parm Code	Value	Storet Comment ID
HARDNESS, TOTAL (MG/L AS CACO3)	00900	192	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	188	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	252	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	216	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	217	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	100	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	125	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	196	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	222	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	214	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	271	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	147	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	210	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	155	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	175	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	191	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	244	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	228	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	153	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	210	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	217	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	269	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	238	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	134	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	120	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	150	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	232	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	262	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	272	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	130	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	114	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	174	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	151	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	207	
HARDNESS, TOTAL (MG/L AS CACO3)	00900	221	

ID	Date Time	Temp Celsius	Field Ph	Do Optical
6BPOW138.91	2/11/15	7.32	8.39	12.42
6BPOW138.91	4/30/15	14.12	8.47	10.76
6BPOW138.91	6/4/15	22.32	8.26	8.78
6BPOW138.91	8/20/15	22.78	8.04	7.38
6BPOW138.91	10/22/15	11.41	8.29	11.22
6BPOW138.91	12/3/15	10.85	7.77	9.94
6BPOW138.91	2/17/16	6.49	7.88	11.26
6BPOW138.91	4/20/16	18	8.47	9.44
6BPOW138.91	6/15/16	24.03	8.23	8.32
6BPOW138.91	8/1/16	24.43	8.1	7.89
6BPOW138.91	10/26/16	11.85	8.04	9.61
6BPOW138.91	12/15/16	6.2	8.13	11.15
6BPOW138.91	2/1/17	5.99	8.18	11.6
6BPOW138.91	4/12/17	15.63	8.23	9.51
6BPOW138.91	6/27/17	19.58	8.17	8.61
6BPOW138.91	8/1/17	21.99	8.06	7.64
6BPOW138.91	10/17/17	16.02	8.18	8.14
6BPOW138.91	12/7/17	6.35	8.44	11.66
6BPOW138.91	2/14/18	9.53	7.81	10.66
6BPOW138.91	4/17/18	10.97	8.26	10.27
6BPOW138.91	6/13/18	21.85	8.14	8.12
6BPOW138.91	8/21/18	24.46	8.12	7.39
6BPOW138.91	10/31/18	10.4	8.22	10.45
6BPOW138.91	12/19/18	7.05	8.03	11.52
6BPOW138.91	2/12/19	9.22	7.76	10.66
6BPOW138.91	4/9/19	14.41	7.85	8.98
6BPOW138.91	6/3/19	21.5	8.09	7.84
6BPOW138.91	8/14/19	24	8.12	7.88
6BPOW138.91	10/1/19	22.28	7.98	6.84
6BPOW138.91	12/3/19	8.56	7.81	10.48
6BPOW138.91	1/6/20	7.33	7.9	11.13
6BPOW138.91	3/2/20	7.15	8.07	11.5
6BPOW138.91	5/4/20	16.3	7.98	9.03
6BPOW138.91	7/1/20	22.6	8.04	7.6
6BPOW138.91	9/1/20	22.4	7.95	7.73

WESTERN LEE SEWER - WWTP ADJACENT PROPERTY INFORMATION					
MAP NO.	OWNER	TAX MAP / PARCEL NO.	ADDRESS	CITY & STATE	ZIP
1	MONTGOMERY, JAMES W	78B-(1)-TR24	284 STATION CREEK RD	EWING, VA	24248
2	BIGELOW, ADAM	78B-(1)-TR25B	318 HERMAN LN	EWING, VA	24248
3	LOWE, KYLE E	79-(A)-19	505 NASH MILL RD	EWING, VA	24248
4	SANDIFER, CLAUDE E & SHIRLEY L	003 021.00	455 GUM HOLLOW LANE	HARROGATE, TN	37752